



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL
TRAINING AT THE UNIVERSITY OF HELSINKI 2005–2010

RC-Specific Evaluation of CoE- MiFoSaPLUS – Extended Center of Excellence in Microbiology and Food Safety Research

Seppo Saari & Antti Moilanen (Eds.)



Evaluation Panel: Biological, Agricultural and Veterinary Sciences

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Title: International Evaluation of Research and Doctoral Training at the University of Helsinki 2005–2010 : RC-Specific Evaluation of CoE-MiFoSaPLUS – Extended Center of Excellence in Microbiology and Food Safety Research	Type of publication: Evaluations
Summary: Researcher Community (RC) was a new concept of the participating unit in the evaluation. Participation in the evaluation was voluntary and the RCs had to choose one of the five characteristic categories to participate. Evaluation of the Researcher Community was based on the answers to the evaluation questions. In addition a list of publications and other activities were provided by the TUHAT system. The CWTS/Leiden University conducted analyses for 80 RCs and the Helsinki University Library for 66 RCs. Panellists, 49 and two special experts in five panels evaluated all the evaluation material as a whole and discussed the feedback for RC-specific reports in the panel meetings in Helsinki. The main part of this report is consisted of the feedback which is published as such in the report. Chapters in the report: 1. Background for the evaluation 2. Evaluation feedback for the Researcher Community 3. List of publications 4. List of activities 5. Bibliometric analyses The level of the RCs' success can be concluded from the written feedback together with the numeric evaluation of four evaluation questions and the category fitness. More conclusions of the success can be drawn based on the University-level report.	
RC-specific information:	
Main scientific field of research: Biological, Agricultural and Veterinary Sciences	RC-specific keywords: food safety intestinal microbiota host-microbe interactions microbial food spoilage psychrotrophy food-borne pathogens food-borne bacterial zoonoses food-borne and emerging viral disease food toxicology bovine mastitis dairy disease registry evaluation (post- and meta-)genomics
Participation category: 1. Research of the participating community represents the international cutting edge in its field	
RC's responsible person: Palva, Airi	
Keywords: Research Evaluation, Meta-evaluation, Doctoral Training, Bibliometric Analyses, Researcher Community	

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Foreword

The evaluation of research and doctoral training is being carried out in the years 2010–2012 and will end in 2012. The steering group appointed by the Rector in January 2010 set the conditions for participating in the evaluation and prepared the Terms of Reference to present the evaluation procedure and criteria. The publications and other scientific activities included in the evaluation covered the years 2005–2010.

The participating unit in the evaluation was defined as a Researcher Community (RC). To obtain a critical mass with university-level impact, the number of members was set to range from 20 to 120. The RCs were required to contain researchers in all stages of their research career, from doctoral students to principal investigators (PIs). All in all, 136 Researcher Communities participated in this voluntary evaluation, 5857 persons in total, of whom 1131 were principal investigators. PIs were allowed to participate in two communities in certain cases, and 72 of them used this opportunity and participated in two RCs.

This evaluation enabled researchers to define RCs from the “bottom up” and across disciplines. The aim of the evaluation was not to assess individual performance but a community with shared aims and researcher-training activities. The RCs were able to choose among five different categories that characterised the status and main aims of their research. The steering group considered the process of applying to participate in the evaluation to be important, which led to the establishment of these categories. In addition, providing a service for the RCs to enable them to benchmark their research at the global level was a main goal of the evaluation.

The data for the evaluation consisted of the RCs’ answers to evaluation questions on supplied e-forms and a compilation extracted from the TUHAT – Research Information System (RIS) on 12 April 2011. The compilation covered scientific and other publications as well as certain areas of scientific activities. During the process, the RCs were asked to check the list of publications and other scientific activities and make corrections if needed. These TUHAT compilations are public and available on the evaluation project sites of each RC in the TUHAT-RIS.

In addition to the e-form and TUHAT compilation, University of Leiden (CWTS) carried out bibliometric analyses from the articles included in the Web of Science (WoS). This was done on University and RC levels. In cases where the publication forums of the RC were clearly not represented by the WoS data, the Library of the University of Helsinki conducted a separate analysis of the publications. This was done for 66 RCs representing the humanities and social sciences.

The evaluation office also carried out an enquiry targeted to the supervisors and PhD candidates about the organisation of doctoral studies at the University of Helsinki. This and other documents describing the University and the Finnish higher education system were provided to the panellists.

The panel feedback for each RC is unique and presented as an entity. The first collective evaluation reports available for the whole panel were prepared in July–August 2011. The reports were accessible to all panel members via the electronic evaluation platform in August. Scoring from 1 to 5 was used to complement written feedback in association with evaluation questions 1–4 (scientific focus and quality, doctoral training, societal impact, cooperation) and in addition to the category evaluating the fitness for participation in the evaluation. Panellists used the international level as a point of comparison in the evaluation. Scoring was not expected to go along with a preset deviation.

Each of the draft reports were discussed and dealt with by the panel in meetings in Helsinki (from 11 September to 13 September or from 18 September to 20 September 2011). In these meetings the panels also examined the deviations among the scores and finalised the draft reports together.

The current RC-specific report deals shortly with the background of the evaluation and the terms of participation. The main evaluation feedback is provided in the evaluation report, organised according to the evaluation questions. The original material provided by the RCs for the panellists has been attached to these documents.

On behalf of the evaluation steering group and office, I sincerely wish to thank you warmly for your participation in this evaluation. The effort you made in submitting the data to TUHAT-RIS is gratefully acknowledged by the University. We wish that you find this panel feedback useful in many ways. The bibliometric profiles may open a new view on your publication forums and provide a perspective for discussion on your choice of forums. We especially hope that this evaluation report will help you in setting the future goals of your research.

Johanna Björkroth
Vice-Rector
Chair of the Steering Group of the Evaluation

Steering Group of the evaluation

Steering group, nominated by the Rector of the University, was responsible for the planning of the evaluation and its implementation having altogether 22 meetings between February 2010 and March 2012.

Chair

Vice-Rector, professor **Johanna Björkroth**

Vice-Chair

Professor **Marja Airaksinen**

Chief Information Specialist, Dr **Maria Forsman**

Professor **Arto Mustajoki**

University Lecturer, Dr **Kirsi Pyhältö**

Director of Strategic Planning and Development, Dr **Ossi Tuomi**

Doctoral candidate, MSocSc **Jussi Vauhkonen**

Panel members

CHAIR

Professor Ary A. Hoffman

Ecological genetics, evolutionary biology,
biodiversity conservation, zoology
University of Melbourne, Australia

VICE-CHAIR

Professor Barbara Koch

Forest Sciences, remote sensing
University of Freiburg, Germany

Professor Per-Anders Hansson

Agricultural engineering, modeling, life cycle
analysis, bioenergy
Swedish University of Agricultural Sciences

Professor Danny Huylebroeck

Developmental biology
Katholieke Universiteit Leuven, Belgium

Professor Jonathan King

Virus assembly, protein folding
Massachusetts Institute of Technology MIT, USA

Professor Hannu J.T. Korhonen

Functional foods, dairy technology, milk hygiene
MTT Agrifood Research Finland

Professor Kristiina Kruus

Microbiological biotechnology, microbiological
enzymes, applied microbiology
VTT Technical Research Centre of Finland

Professor Joakim Lundeberg

Biochemistry, biotechnology, sequencing, genomics
KTH Royal Institute of Technology, Sweden

Professor Dominiek Maes

Veterinary medicine
Ghent University, Belgium

Professor Olli Saastamoinen

Forest economics and policy
University of Eastern Finland

Professor Kai Simons

Biochemistry, molecular biology, cell biology
Max-Planck-Institute of Molecular Cell Biology and
Genetics, Germany

The panel, independently, evaluated all the submitted material and was responsible for the feedback of the RC-specific reports. The panel members were asked to confirm whether they had any conflict of interests with the RCs. If this was the case, the panel members disqualified themselves in discussion and report writing.

Added expertise to the evaluation was contributed by the members from the other panels and by one evaluator outside the panels.

External Expert
Professor Anders Linde
Oral biochemi
Faculty of Odontology
Göteborg University
Sweden

Experts from the Other Panels

Professor Caitlin Buck, from the Panel of Natural Sciences
Professor Ritske Huismans, from the Panel of Natural Sciences
Professor Johanna Ivaska, from the Panel of Medicine, biomedicine and health sciences
Professor Lea Kauppi, from the Panel of Natural Sciences
Professor Holger Stark, from the Panel of Natural Sciences
Professor Peter York, from the Panel of Medicine, biomedicine and health sciences

EVALUATION OFFICE

Dr Seppo Saari, Doc., Senior Adviser in Evaluation, was responsible for the entire evaluation, its planning and implementation and acted as an Editor-in-chief of the reports.

Dr Eeva Sievi, Doc., Adviser, was responsible for the registration and evaluation material compilations for the panellists. She worked in the evaluation office from August 2010 to July 2011.

MSocSc Paula Ranne, Planning Officer, was responsible for organising the panel meetings and all the other practical issues like agreements and fees and editing a part the RC-specific reports. She worked in the evaluation office from March 2011 to January 2012.

Mr Antti Mollanen, Project Secretary, was responsible for editing the reports. He worked in the evaluation office from January 2012 to April 2012.

TUHAT OFFICE

Provision of the publication and other scientific activity data

Mrs Aija Kaitera, Project Manager of TUHAT-RIS served the project ex officio providing the evaluation project with the updated information from TUHAT-RIS. The TUHAT office assisted in mapping the publications with CWTS/University of Leiden.

MA Liisa Ekebom, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation. She also assisted the UH/Library analyses.

BA Liisa Jäppinen, Assisting Officer, served in TUHAT-RIS updating the publications for the evaluation.

HELSINKI UNIVERSITY LIBRARY

Provision of the publication analyses

Dr Maria Forsman, Chief Information Specialist in the Helsinki University Library, managed with her 10 colleagues the bibliometric analyses in humanities, social sciences and in other fields of sciences where CWTS analyses were not applicable.

Acronyms and abbreviations applied in the report

External competitive funding

AF – Academy of Finland
TEKES - Finnish Funding Agency for Technology and Innovation
EU - European Union
ERC - European Research Council
International and national foundations
FP7/6 etc. /Framework Programmes/Funding of European Commission

Evaluation marks

Outstanding (5)
Excellent (4)
Very Good (3)
Good (2)
Sufficient (1)

Abbreviations of Bibliometric Indicators

P - Number of publications
TCS – Total number of citations
MCS - Number of citations per publication, excluding self-citations
PNC - Percentage of uncited publications
MNCS - Field-normalized number of citations per publication
MNJS - Field-normalized average journal impact
THCP10 - Field-normalized proportion highly cited publications (top 10%)
INT_COV - Internal coverage, the average amount of references covered by the WoS
WoS – Thomson Reuters Web of Science Databases

Participation category

Category 1. The research of the participating community represents the international cutting edge in its field.
Category 2. The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.
Category 3. The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.
Category 4. The research of the participating community represents an innovative opening.
Category 5. The research of the participating community has a highly significant societal impact.

Research focus areas of the University of Helsinki

Focus area 1: The basic structure, materials and natural resources of the physical world
Focus area 2: The basic structure of life
Focus area 3: The changing environment – clean water
Focus area 4: The thinking and learning human being
Focus area 5: Welfare and safety
Focus area 6: Clinical research
Focus area 7: Precise reasoning
Focus area 8: Language and culture
Focus area 9: Social justice
Focus area 10: Globalisation and social change

1 Introduction to the Evaluation

1.1 RC-specific evaluation reports

The participants in the evaluation of research and doctoral training were Researcher Communities (hereafter referred to as the RC). The RC refers to the group of researchers who registered together in the evaluation of their research and doctoral training. Preconditions in forming RCs were stated in the Guidelines for the Participating Researcher Communities. The RCs defined themselves whether their compositions should be considered well-established or new.

It is essential to emphasise that the evaluation combines both meta-evaluation¹ and traditional research assessment exercise and its focus is both on the research outcomes and procedures associated with research and doctoral training. The approach to the evaluation is enhancement-led where self-evaluation constituted the main information. The answers to the evaluation questions formed together with the information of publications and other scientific activities an entity that was to be reviewed as a whole.

The present evaluation recognizes and justifies the diversity of research practices and publication traditions. Traditional Research Assessment Exercises do not necessarily value high quality research with low volumes or research distinct from mainstream research. It is challenging to expose the diversity of research to fair comparison. To understand the essence of different research practices and to do justice to their diversity was one of the main challenges of the present evaluation method. Understanding the divergent starting points of the RCs demanded sensitivity from the evaluators.

1.2 Aims and objectives in the evaluation

The aims of the evaluation are as follows:

- to improve the level of research and doctoral training at the University of Helsinki and to raise their international profile in accordance with the University's strategic policies. The improvement of doctoral training should be compared to the University's policy.²
- to enhance the research conducted at the University by taking into account the diversity, originality, multidisciplinary nature, success and field-specificity,
- to recognize the conditions and prerequisites under which excellent, original and high-impact research is carried out,
- to offer the academic community the opportunity to receive topical and versatile international peer feedback,
- to better recognize the University's research potential.
- to exploit the University's TUHAT research information system to enable transparency of publishing activities and in the production of reliable, comparable data.

1.3 Evaluation method

The evaluation can be considered as an enhancement-led evaluation. Instead of ranking, the main aim is to provide useful information for the enhancement of research and doctoral training of the participating RCs. The comparison should take into account each field of science and acknowledge their special character.

¹ The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics or comparable analyses.

² [Policies on doctoral degrees and other postgraduate degrees at the University of Helsinki.](#)

The comparison produced information about the present status and factors that have lead to success. Also challenges in the operations and outcomes were recognized.

The evaluation approach has been designed to recognize better the significance and specific nature of researcher communities and research areas in the multidisciplinary top-level university. Furthermore, one of the aims of the evaluation is to bring to light those evaluation aspects that differ from the prevalent ones. Thus the views of various fields of research can be described and research arising from various starting points understood better. The doctoral training is integrated into the evaluation as a natural component related to research. Operational processes of doctoral training are being examined in the evaluation.

Five stages of the evaluation method were:

1. Registration – Stage 1
2. Self-evaluation – Stage 2
3. TUHAT³ compilations on publications and other scientific activities⁴
4. External evaluation
5. Public reporting

1.4 Implementation of the external evaluation

Five Evaluation Panels

Five evaluation panels consisted of independent, renowned and highly respected experts. The main domains of the panels are:

1. biological, agricultural and veterinary sciences
2. medicine, biomedicine and health sciences
3. natural sciences
4. humanities
5. social sciences

The University invited 10 renowned scientists to act as chairs or vice-chairs of the five panels based on the suggestions of faculties and independent institutes. Besides leading the work of the panel, an additional role of the chairs was to discuss with other panel chairs in order to adopt a broadly similar approach. The panel chairs and vice-chairs had a pre-meeting on 27 May 2011 in Amsterdam.

The panel compositions were nominated by the Rector of the University 27 April 2011. The participating RCs suggested the panel members. The total number of panel members was 50. The reason for a smaller number of panellists as compared to the previous evaluations was the character of the evaluation as a meta-evaluation. The panellists did not read research reports or abstracts but instead, they evaluated answers to the evaluation questions, tables and compilations of publications, other scientific activities, bibliometrics and comparable analyses.

The panel meetings were held in Helsinki:

- On 11–13 September 2011: (1) biological, agricultural and veterinary sciences, (2) medicine, biomedicine and health sciences and (3) natural sciences.
- On 18–20 September 2011: (4) humanities and (5) social sciences.

³ TUHAT (acronym) of Research Information System (RIS) of the University of Helsinki

⁴ Supervision of thesis, prizes and awards, editorial work and peer reviews, participation in committees, boards and networks and public appearances.

1.5 Evaluation material

The main material in the evaluation was the RCs' self-evaluations that were qualitative in character and allowed the RCs to choose what was important to mention or emphasise and what was left unmentioned.

The present evaluation is exceptional at least in the Finnish context because it is based on both the evaluation documentation (self-evaluation questions, publications and other scientific activities) and the bibliometric reports. All documents were delivered to the panellists for examination.

Traditional bibliometrics can be reasonably done mainly in medicine, biosciences and natural sciences when using the Web of Science database, for example. Bibliometrics, provided by CWTS/The Centre for Science and Technology Studies, University of Leiden, cover only the publications that include WoS identification in the TUHAT-RIS.

Traditional bibliometrics are seldom relevant in humanities and social sciences because the international comparable databases do not store every type of high quality research publications, such as books and monographs and scientific journals in other languages than English. The Helsinki University Library has done analysis to the RCs, if their publications were not well represented in the Web of Science databases (RCs should have at least 50 publications and internal coverage of publications more than 40%) – it meant 58 RCs. The bibliometric material for the evaluation panels was available in June 2011. The RC-specific bibliometric reports are attached at the end of each report.

The panels were provided with the evaluation material and all other necessary background information, such as the basic information about the University of Helsinki and the Finnish higher education system.

Evaluation material

1. Registration documents of the RCs for the background information
2. Self evaluation material – answers to the evaluation questions
3. Publications and other scientific activities based on the TUHAT RIS:
 - 3.1. statistics of publications
 - 3.2. list of publications
 - 3.3. statistics of other scientific activities
 - 3.4. list of other scientific activities
4. Bibliometrics and comparable analyses:
 - 4.1. Analyses of publications based on the verification of TUHAT-RIS publications with the Web of Science publications (CWTS/University of Leiden)
 - 4.2. Publication statistics analysed by the Helsinki University Library - mainly for humanities and social sciences
5. University level survey on doctoral training (August 2011)
6. University level analysis on publications 2005–2010 (August 2011) provided by CWTS/University of Leiden

Background material

University of Helsinki

- [Basic information about the University of the Helsinki](#)
- [The structure of doctoral training at the University of Helsinki](#)
- Previous evaluations of research at the University of Helsinki – links to the reports: [1998](#) and [2005](#)

The Finnish Universities/Research Institutes

- [Finnish University system](#)
- [Evaluation of the Finnish National Innovation System](#)
- [The State and Quality of Scientific Research in Finland. Publication of the Academy of Finland 9/09.](#)

The evaluation panels were provided also with other relevant material on request before the meetings in Helsinki.

1.6 Evaluation questions and material

The participating RCs answered the following evaluation questions which are presented according to the evaluation form. In addition, TUHAT RIS was used to provide the **additional material** as explained. For giving the feedback to the RCs, the panellists received the evaluation feedback form constructed in line with the evaluation questions:

1. Focus and quality of the RC's research

- Description of
 - the RC's research focus.
 - the quality of the RC's research (incl. key research questions and results)
 - the scientific significance of the RC's research in the research field(s)
- Identification of the ways to strengthen the focus and improve the quality of the RC's research

The additional material: TUHAT compilation of the RC's publications, analysis of the RC's publications data (provided by University of Leiden and the Helsinki University Library)

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

2. Practises and quality of doctoral training

- Organising of the doctoral training in the RC. Description of the RC's principles for:
 - recruitment and selection of doctoral candidates
 - supervision of doctoral candidates
 - collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes
 - good practises and quality assurance in doctoral training
 - assuring of good career perspectives for the doctoral candidates/fresh doctorates
- Identification of the RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.

The additional material: TUHAT compilation of the RC's other scientific activities/supervision of doctoral dissertations

A written feedback from the aspects of: processes and good practices related to leadership and management

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

3. The societal impact of research and doctoral training

- Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).
- Identification of the ways to strengthen the societal impact of the RC's research and doctoral training.

The additional material: TUHAT compilation of the RC's other scientific activities.

A written feedback from the aspects of: societal impact, national and international collaboration, innovativeness

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

4. International and national (incl. intersectoral) research collaboration and researcher mobility

- Description of
 - the RC's research collaborations and joint doctoral training activities
 - how the RC has promoted researcher mobility
- Identification of the RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.

A written feedback from the aspects of: scientific quality, national and international collaboration

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

5. Operational conditions

- Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).
- Identification of the RC's strengths and challenges related to operational conditions, and the actions planned for their development.

A written feedback from the aspects of: processes and good practices related to leadership and management

- Strengths
- Areas of development
- Other remarks
- Recommendations

6. Leadership and management in the researcher community

- Description of
 - the execution and processes of leadership in the RC
 - how the management-related responsibilities and roles are distributed in the RC
 - how the leadership- and management-related processes support
 - high quality research
 - collaboration between principal investigators and other researchers in the RC
 - the RC's research focus
 - strengthening of the RC's know-how
- Identification of the RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes

7. External competitive funding of the RC

- The RCs were asked to provide information of such external competitive funding, where:
 - the funding decisions have been made during 1.1.2005-31.12.2010, and
 - the administrator of the funding is/has been the University of Helsinki
- On the e-form the RCs were asked to provide:
 - 1) The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation , EU, ERC, foundations, other national funding organisations, other international funding organisations), and
 - 2) The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005-31.12.2010.

Competitive funding reported in the text is also to be considered when evaluating this point.

A written feedback from the aspects of: scientific quality, scientific significance, societal impact, innovativeness, future significance

- Strengths
- Areas of development
- Other remarks
- Recommendations

8. The RC's strategic action plan for 2011-2013

- RC's description of their future perspectives in relation to research and doctoral training.

A written feedback from the aspects of: scientific quality, scientific significance, societal Impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

- Strengths
- Areas of development

- Other remarks
- Recommendations

9. Evaluation of the category of the RC in the context of entity of the evaluation material (1-8)

The RC's fitness to the chosen participation category

A written feedback evaluating the RC's fitness to the chosen participation category

- Strengths
- Areas of development
- Other remarks
- Recommendations

Numeric evaluation: OUTSTANDING (5), EXCELLENT (4), VERY GOOD (3), GOOD (2), SUFFICIENT (1)

10. Short description of how the RC members contributed the compilation of the stage 2 material

Comments on the compilation of evaluation material

11. How the UH's focus areas are presented in the RC's research?

Comments if applicable

12. RC-specific main recommendations based on the previous questions 1-11

13. RC-specific conclusions

1.7 Evaluation criteria

The panellists were expected to give evaluative and analytical feedback to each evaluation question according to their aspects in order to describe and justify the quality of the submitted material. In addition, the evaluation feedback was asked to be pointed out the level of the performance according to the following classifications:

- outstanding (5)
- excellent (4)
- very good (3)
- good (2)
- sufficient (1)

Evaluation according to the criteria was to be made with thorough consideration of the entire evaluation material of the RC in question. Finally, in questions 1-4 and 9, the panellists were expected to classify their written feedback into one of the provided levels (the levels included respective descriptions, 'criteria'). Some panels used decimals in marks. The descriptive level was interpreted according to the integers and not rounding up the decimals by the editors.

Description of criteria levels

Question 1 – FOCUS AND QUALITY OF THE RC'S RESEARCH

Classification: Criteria (level of procedures and results)

Outstanding quality of procedures and results (5)

Outstandingly strong research, also from international perspective. Attracts great international interest with a wide impact, including publications in leading journals and/or monographs published by leading international publishing houses. The research has world leading qualities. The research focus, key research questions scientific significance, societal impact and innovativeness are of outstanding quality.

In cases where the research is of a national character and, in the judgement of the evaluators, should remain so, the concepts of "international attention" or "international impact" etc. in the grading criteria above may be replaced by "international comparability".

Operations and procedures are of outstanding quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality.

Excellent quality of procedures and results (4)

Research of excellent quality. Typically published with great impact, also internationally. Without doubt, the research has a leading position in its field in Finland.

Operations and procedures are of excellent quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality.

Very good quality of procedures and results (3)

The research is of such very good quality that it attracts wide national and international attention.

Operations and procedures are of very good quality, transparent and shared in the community. The improvement of research and other efforts are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

Good quality of procedures and results (2)

Good research attracting mainly national attention but possessing international potential, extraordinarily high relevance may motivate good research.

Operations and procedures are of good quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

Sufficient quality of procedures and results (1)

In some cases the research is insufficient and reports do not gain wide circulation or do not have national or international attention. Research activities should be revised.

Operations and procedures are of sufficient quality, shared occasionally in the community. The improvement of research and other efforts are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

Question 2 – DOCTORAL TRAINING

Question 3 – SOCIETAL IMPACT

Question 4 – COLLABORATION

Classification: Criteria (level of procedures and results)

Outstanding quality of procedures and results (5)

Procedures are of outstanding quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are in alignment with the documentation. The ambition to develop the community together is of outstanding quality. The procedures and results are regularly evaluated and the feedback has an effect on the planning.

Excellent quality of procedures and results (4)

Procedures are of excellent quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of excellent quality. The procedures and outcomes are evaluated and the feedback has an effect on the planning.

Very good quality of procedures and results (3)

Procedures are of very good quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and

management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of very good quality.

Good quality of procedures and results (2)

Procedures are of good quality, shared occasionally in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are documented and operations and practices are to large extent in alignment with the documentation. The ambition to develop the community together is of good quality.

Sufficient quality of procedures and results (1)

Procedures are of sufficient quality, transparent and shared in the community. The practices and quality of doctoral training/societal impact/international and national collaboration/leadership and management are occasionally documented and operations and practices are to some extent in alignment with the documentation. The ambition to develop the community together is of sufficient quality.

Question 9 – CATEGORY

Participation category – fitness for the category chosen

The choice and justification for the chosen category below should be reflected in the RC's responses to the evaluation questions 1–8.

1. *The research of the participating community represents the international cutting edge in its field.*
2. *The research of the participating community is of high quality, but the community in its present composition has yet to achieve strong international recognition or a clear break-through.*
3. *The research of the participating community is distinct from mainstream research, and the special features of the research tradition in the field must be considered in the evaluation.* The research is of high quality and has great significance and impact in its field. However, the generally used research evaluation methods do not necessarily shed sufficient light on the merits of the research.
4. *The research of the participating community represents an innovative opening.* A new opening can be an innovative combination of research fields, or it can be proven to have a special social, national or international demand or other significance. Even if the researcher community in its present composition has yet to obtain proof of international success, its members can produce convincing evidence of the high level of their previous research.
5. *The research of the participating community has a highly significant societal impact.* The participating researcher community is able to justify the high social significance of its research. The research may relate to national legislation, media visibility or participation in social debate, or other activities promoting social development and human welfare. In addition to having societal impact, the research must be of a high standard.

An example of outstanding fitness for category choice (5) ⁵

The RC's representation and argumentation for the chosen category were convincing. The RC recognized its real capacity and apparent outcomes in a wider context to the research communities. The specific character of the RC was well-recognized and well stated in the responses. The RC fitted optimally for the category.

- Outstanding (5)
- Excellent (4)
- Very good (3)
- Good (2)
- Sufficient (1)

The above-mentioned definition of outstanding was only an example in order to assist the panellists in the positioning of the classification. There was no exact definition for the category fitness.

⁵ The panels discussed the category fitness and made the final conclusions of the interpretation of it.

1.8 Timetable of the evaluation

The main timetable of the evaluation:

- | | |
|--|-----------------------|
| 1. Registration | November 2010 |
| 2. Submission of self-evaluation materials | January–February 2011 |
| 3. External peer review | May–September 2011 |
| 4. Published reports | March–April 2012 |
| - University level public report | |
| - RC specific reports | |

The entire evaluation was implemented during the university's strategy period 2010–2012. The preliminary results were available for the planning of the following strategy period in late autumn 2011. The evaluation reports will be published in March/April 2012. More detailed time schedule is published in the University report.

1.9 Evaluation feedback – consensus of the entire panel

The panellists evaluated all the RC-specific material before the meetings in Helsinki and mailed the draft reports to the evaluation office. The latest interim versions were on-line available to all the panellists on the Wiki-sites. In September 2011, in Helsinki the panels discussed the material, revised the first draft reports and decided the final numeric evaluation. After the meetings in Helsinki, the panels continued working and finalised the reports before the end of November 2011. The final RC-specific reports are the consensus of the entire panel.

The evaluation reports were written by the panels independently. During the editing process, the evaluation office requested some clarifications from the panels when necessary. The tone and style in the reports were not harmonized in the editing process. All the reports follow the original texts written by the panels as far as it was possible.

The original evaluation material of the RCs, provided for the panellists is attached at the end of the report. It is essential to notice that the exported lists of publications and other scientific activities depend how the data was stored in the TUHAT-RIS by the RCs.

2 Evaluation feedback

2.1 Focus and quality of the RC's research

- *Description of*
 - *the RC's research focus*
 - *the quality of the RC's research (incl. key research questions and results)*
 - *the scientific significance of the RC's research in the research field(s)*
- *Identification of the ways to strengthen the focus and improve the quality of the RC's research*

ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness

The research focus of the RC is food safety and microbiology, targeting sustained or improved protection of animal and human health. Pursued research topics are multidisciplinary. They range from the role of intestinal microbiota and host-microbe interactions in health and disease to molecular understanding of the interactions of psychrotrophic LAB and to the genetics and functions of pathogenic bacteria, reaching to dioxin contamination and epidemiologic registry evaluation of bovine mastitis. Despite the wide diversity, the scientific quality in all these research disciplines is outstanding, as can be verified from the high number (> 370) of peer-reviewed articles in leading international scientific journals, e.g. Lancet and Science.

The high scientific quality of research by the RC is also reflected by the frequent invitations to international scientific meetings and high scoring in various evaluation tasks in recent years, as well as by many research grants, science awards and honorary memberships received by individual PI's both in Finland and abroad.

Furthermore, the RC trains a large number of PhDs, a total number of 34 doctors were graduated during 2005-2010 and the doctors found good positions to continue their careers in different sectors in the industry, government or academia.

The scientific significance of the RC's research is remarkable and tangible regarding both the advancement of basic science and the societal impact with many applications exploited by food industries. The group also looks critically for ways to maintain and/or further improve the quality of their research.

Questions

- What is the scientific output per professor or researcher with permanent position?
- Dioxin research seems to be out of microbiological focus of the RC, any integration to the mainstream research?

Numeric evaluation: 5 (Outstanding)

2.2 Practises and quality of doctoral training

- *Organising of the doctoral training in the RC. Description of the RC's principles for:*
 - *recruitment and selection of doctoral candidates*
 - *supervision of doctoral candidates*
 - *collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes*
 - *good practises and quality assurance in doctoral training*
 - *assuring of good career perspectives for the doctoral candidates/fresh doctorates*
- *Identification of the RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.*
- *Additional material: TUHAT compilation of the RC's other scientific activities/supervision of doctoral dissertations*

ASPECTS: Processes and good practices related to leadership and management

The extended RC has currently 58 doctoral candidates and 14 of them are foreigners. The doctoral training is programmed and research focused. In the evaluation material provided by the RC, the recruitment process, supervision and role of collaborators are described in detail. The recruitment process is transparent and follows an open call policy. Supervision is based mainly on mentoring in form of regular discussions and meetings between the doctoral candidates and nominated supervisors. A thesis advisory committee is appointed to gauge and monitor the theses' progress. It appears that the RC stresses the supervisors' commitment to closely guide the progress made by the doctoral candidates.

Most doctoral students are enrolled as members of major doctoral programs or schools. It is obvious that participation in specially tailored doctoral programs add to the quality of the candidates' scientific skills and research portfolio. The RC places a lot emphasis on developing each doctoral candidate's ability to convey research findings convincingly and to interact/network with scientific peers. Participation in public speaking events, including international seminars and congresses is strongly advised by the RC. There is well-established interaction between the researcher groups within the RC.

The RC has adopted the above system as GOOD PRACTICES to follow. Also, a 4-tiered plan for researcher career development is built into the doctoral program. During 2005-2010, a total of 34 doctoral students have graduated from the RC and found career opportunities in academia, health, government and industry sectors.

The RC is also proposing to develop doctoral training by establishing a doctoral program in which the industry would be more involved.

According to the provided evaluation material, the RC's key strengths are 1) the ability to attract a highly motivated international mix of doctoral candidates, 2) multi-disciplinary research groups encompassing different levels of expertise in research, training and education, 3) a strategically structured and well-organized plan for doctoral training and career development and 4) active research collaboration with other groups and departments outside the RC. Major challenges are 1) promotion of international networking amongst doctoral candidates and 2) transition to postdoctoral/senior scientists after obtaining the PhD degree.

In conclusion, it appears that the RC has a serious motivation to produce, through a well-organized training system, doctors with good scientific skills and a range of career perspectives. This approach provides a good model also for other RCs to follow.

Questions

- What is the distribution of PhD. degrees in different disciplines?
- What is the drop-out percentage?
- Is there any follow-up system for career development after graduation?

Numeric evaluation: 5 (Outstanding)

2.3 The societal impact of research and doctoral training

- *Description on how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).*
- *Identification of the ways to strengthen the societal impact of the RC's research and doctoral training.*
- *Additional material: TUHAT compilation of the RC's other scientific activities.*

ASPECTS: Societal impact, national and international collaboration, innovativeness

As one of its interdisciplinary goals, the RC aims at producing novel and effective solutions to food safety and quality. To this end, the RC maintains close collaborative ties with several Finnish companies through joint research projects and annual meetings. However, the Finnish industry does not seem to fund the RC directly. Maybe the collaboration can be strengthened by generating projects where the funding comes from the industry. Also, collaboration with the government, municipal authorities and local professional associations is pursued. As a result, many solutions have been developed and transferred successfully to

the industrial beneficiaries and food control authorities. Surprisingly, The RC has not been active in patenting its inventions, as only two patents have been granted during the years under review.

In the evaluation material, the RC has suggested to increase the industry-readiness amongst doctoral candidates by proposing a new doctoral program that is shared with partners from the food and food-related industries. Thus, doctoral candidates would be exposed to a wider education geared towards industry needs and leading to a better societal impact. The RC has also recommended participation of researchers in EU expert advisory committees, implementation of an annual day of doctoral student presentations and other opportunities to disseminate research results.

It can be concluded that the above initiatives are welcome but have to be assessed in the context of other existing establishments, for example the ABS, Annual Food Day and other public events.

Questions

- What is the IPR policy of the RC and the Faculty/Department?
- Why the number of patents is only two during the review period?

Numeric evaluation: 4 (Excellent)

2.4 International and national (incl. intersectoral) research collaboration and researcher mobility

- *Description of*
 - *the RC's research collaborations and joint doctoral training activities*
 - *how the RC has promoted researcher mobility*
- *Identification of the RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.*

ASPECTS: Scientific quality, national and international collaboration

The RC has established a highly active research collaboration with a great number of universities and research institutions worldwide, and in particular in Europe. The RC has a Finland Distinguished Professor Programme (FiDiPro) Professor to assure high level international collaboration. The strong international approach includes the doctoral training program and the RC encourages short and long-term exchanges and visits to other research groups and laboratories, both in Finland and abroad. Also, participation of the PhD candidates at national and international scientific meetings, at least once a year, is encouraged. The ABS Graduate School and other similar schools abroad are given as examples of practical and existing structures to assist in organizing such researcher mobility. On the other hand, the RC stresses the problems related to financing the researcher mobility. The RC has frequently hosted visiting scientists and delegations in peer-to-peer meetings which are also attended by doctoral students. Another routine is to arrange Skype or conference calls.

The amount of international funding especially from the EU is relatively low and could be increased. The RC could participate in the EU projects more often, also a coordinator's role in EU projects should be considered in certain strategic projects.

According to the RC's self-evaluation, the strengths of collaborative research include 1) shared scientific focus on food safety and microbiology related issues, 2) the ability to network with top scientists in the field and 3) a growing presence of international doctoral students.

Questions

- Number of researcher exchange visits per year and targets?
- Is there a plan for visiting foreign researchers and doctoral students?
- Which are the major disciplines attracting foreign researchers?
- Is there a plan of international visits of the seniors and how to assure international collaboration of the RC, not just of doctoral students?

Numeric evaluation: 5 (Outstanding)

2.5 Operational conditions

- *Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).*
- *Identification of the RC's strengths and challenges related to operational conditions, and the actions planned for their development.*

ASPECTS: Processes and good practices related to leadership and management

The RC has recently refurbished infrastructure and core research facilities for carrying out basic research at disposal. The laboratory is well equipped and the facilities are very modern. The RC is located in the same building in the Viikki Campus area. This provides good opportunities for close collaborations and interactions. Additional research equipment is available at other laboratories of the Viikki Campus.

The strength is that the RC is facilitated with modern infrastructure and necessary laboratory equipment. Challenges include e.g. the need for 1) an on-site national center for microbial sequencing and functional bioinformatic analysis, 2) an animal containment facility for toxicological research and 3) an administrative unit for handling research contracts etc. and 4) the balance between teaching, research and administrative work seems to be a common challenge in the RCs.

Supporting actions from the university's side should be carefully thought and generated to assure that the researchers could concentrate on their main responsibilities of teaching and research.

2.6 Leadership and management in the researcher community

- *Description of*
 - *the execution and processes of leadership in the RC*
 - *how the management-related responsibilities and roles are distributed in the RC*
 - *how the leadership- and management-related processes support*
 - *high quality research*
 - *collaboration between principal investigators and other researchers in the RC*
 - *the RC's research focus*
 - *strengthening of the RC's know-how*
- *Identification of the RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes*

ASPECTS: Processes and good practices related to leadership and management

The RC includes two departments, a Centre of Excellence and a PI-led doctoral program. This set-up provides a functional decision-making structure and process for mandating effective leadership. The evaluation material compiled by the RC describes the management procedures in detail. It appears that this structure is well operational, though some challenges have been identified and listed by the RC. The Centre of Excellence funded by the Academy of Finland seems to improve coherence in the research and also in the management. The research groups, although being very independent, have also scientific collaboration.

According to the RC, the major strength of the leadership and management is effective scientific leadership skills and expertise amongst senior PIs. The major challenge is how to cope with the need for effective feedback, services and support on grant and other financial matters as well as with administrative duties from the University of Helsinki.

Question - comment

- It is good that there are 5 post-doc positions in the RC. How important are these persons for the RC, and does the RC aims to increase the number of post-doc positions, or alternatively, to maintain this level and to focus more on the PhD positions?

2.7 External competitive funding of the RC

- *The RCs were asked to provide information of such external competitive funding, where:*
 - *the funding decisions have been made during 1.1.2005–31.12.2010, and*
 - *the administrator of the funding is/has been the University of Helsinki*
- *On the e-form the RCs were asked to provide:*
 - 1) *The relevant funding source(s) from a given list (Academy of Finland/Research Council, TEKES/The Finnish Funding Agency for Technology and Innovation, EU, ERC, foundations, other national funding organisations, other international funding organizations), and*
 - 2) *The total sum of funding which the organisation in question had decided to allocate to the RCs members during 1.1.2005–31.12.2010.*

Competitive funding reported in the text is also to be considered when evaluating this point.

ASPECTS: Scientific quality, scientific significance, societal impact, innovativeness and future significance

The major funding of the RC is provided by the Academy of Finland, the Finnish Funding Agency for Technology and Innovation (Tekes), and other national funding sources.

International funding is rather marginal, and no mention is made about funding granted by Finnish or international industries.

The RC has been very successful in obtaining competitive funding from the Academy of Finland and Tekes.

Possibilities to increase funding from the EU and the industry should be carefully evaluated.

2.8 The RC's strategic action plan for 2011–2013

- *RC's description of their future perspectives in relation to research and doctoral training.*

ASPECTS: Scientific quality, scientific significance, societal Impact, processes and good practices related to leadership and management, national and international collaboration, innovativeness, future significance

In the evaluation material, the RC has provided a detailed strategic plan for 2011–2013. The plan emphasizes the developments made since the last evaluation in 2005 and suggests some new developments, e.g. establishing new research partnerships between the University of Helsinki (UH) and industry, cooperation with other UH research groups and establishment of a bioinformatics expertise group at the Faculty.

The strategy is carefully prepared and responds to the demands in this field of research. The importance of bioinformatics and systems biology is recognized and plans to develop these areas are set up.

2.9 Evaluation of the category of the RC in the context of entity of the evaluation material (1–8)

The RC's fitness to the chosen participation category.

Category 1. The research of the participating community represents the international cutting edge in its field.

Category 1 'The research of the participating community represents the international cutting edge in its field' selected by the RC seems very fitting in comparison to the RC's research focus and disciplines described in the material provided for evaluation.

Numeric evaluation: 5 (Outstanding)

2.10 Short description of how the RC members contributed the compilation of the stage 2 material

The employed process seems appropriate and reflects the good practises applied by the RC.

2.11 How the UH's focus areas are presented in the RC's research

Focus area 5: Welfare and safety

The UH's focus areas, especially 'Welfare and safety', are precisely presented in the RC's research.

2.12 RC-specific main recommendations

The RC is producing outstanding research in its specific field and can in many ways set a benchmark to other RCs under review. Expansion to Plus is considered valuable and worth strengthening.

Some areas of the RC's activities can be singled out as examples of good practises to follow while in some areas improvements could be envisaged:

- The doctoral training program and especially the supervision of doctoral students is well established and provides many ideas to be adopted by other groups.
- The societal impact is good but rather academic, it could be higher through a closer cooperation with Finnish and international industries (e.g. food and pharmaceutical).
- A doctoral program with industries is a recommended approach to pursue better societal impact.
- Sharing of time between research and teaching seems to be a major challenge and should be tackled as a strategic issue with the Faculty.
- An IPR policy for the RC should be worked out, if it is not existing as yet
- The strategic plan is well focused and suggests new partnerships and supportive research fields, e.g. bioinformatics and system biology. These are all recommended.
- Sources of funding could be expanded, e.g. industries and the EU.

2.13 RC-specific conclusions

The RC conducts internationally acclaimed research and represents cutting edge in its field- justified as a Centre of Excellence and even extended as it is here.

The RC has highly distinguished Finnish and international research staff with excellent track records and networking capacities.

Doctoral training is well established and in many aspects sets a validated benchmark for other RC's to follow both in regard to applied procedures and scientific outputs by the doctoral students.

International cooperation and networking is also well established and conducive to the outputs of the doctoral program.

Research collaboration with industries and other stakeholders could be expanded in order to increase funding and societal impact.

2.14 Preliminary findings in the Panel-specific feedback

The RC produces outstanding and internationally acclaimed research in its own focused field.

The focus of the RC could be expanded to areas which contribute to better societal impact.

Doctoral training is well established with many good practices as a valid benchmark for other RCs.

International cooperation is excellent but funding from the EU and private sector (industries) is a challenge.

Balance between research and teaching duties seems to be problematic and should be discussed by the Faculty as a strategic issue.

2.15 Preliminary findings in the University-level evaluation

The RC produces internationally recognized and outstanding basic research but the focus could be expanded to gain better societal impact.

Doctoral training is well organized with high efficacy in terms of quantity and quality and sets a validated benchmark for many other RC's to adopt.

A doctoral program with the food and pharma industries is in the pipeline and recommended.

The funding base of the RC is mainly Finnish and quite narrow, more international funding should be sought.

3 Appendices

- A. Original evaluation material
 - a. Registration material – Stage 1
 - b. Answers to evaluation questions – Stage 2
 - c. List of publications
 - d. List of other scientific activities
- B. Bibliometric analyses
 - a. Analysis provided by CWTS/University of Leiden
 - b. Analysis provided by Helsinki University Library (66 RCs)



International evaluation of research and doctoral training
at the University of Helsinki 2005-2010

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW

NAME OF THE RESEARCHER COMMUNITY:

EXTENDED CENTER OF EXCELLENCE MICROBIOLOGY AND FOOD SAFETY RESEARCH
(CoE-MiFoSaPLUS)

LEADER OF THE RESEARCHER COMMUNITY:

Professor Airi Palva, Department of Veterinary Biosciences, Faculty of Veterinary Medicine

RC-SPECIFIC MATERIAL FOR THE PEER REVIEW:

- Material submitted by the RC at stages 1 and 2 of the evaluation
 - STAGE 1 material: RC's registration form (incl. list of RC participants in an excel table)
 - STAGE 2 material: RC's answers to evaluation questions
- TUHAT compilations of the RC members' publications 1.1.2005-31.12.2010
- TUHAT compilations of the RC members' other scientific activities 1.1.2005-31.12.2010
- Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010 (analysis carried out by CWTS, Leiden University)

NB! Since Web of Science(WoS)-based bibliometrics does not provide representative results for most RCs representing humanities, social sciences and computer sciences, the publications of these RCs will be analyzed by the UH Library (results available by the end of June, 2011)



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

1 RESPONSIBLE PERSON

Name: PALVA, AIRI

E-mail:

Phone: +358 9 191 57058

Affiliation: Department of Veterinary Biosciences, Faculty of Veterinary Medicine

Street address: Agnes Sjöbergin katu 2

2 DESCRIPTION OF THE PARTICIPATING RESEARCHER COMMUNITY (RC)

Name of the participating RC (max. 30 characters): EXTENDED CENTER OF EXCELLENCE IN MICROBIOLOGY AND FOOD SAFETY RESEARCH

Acronym for the participating RC (max. 10 characters): CoE-MiFoSaPLUS

Description of the operational basis in 2005-2010 (eg. research collaboration, joint doctoral training activities) on which the RC was formed (MAX. 2200 characters with spaces): Microorganisms are the most abundant life form on this planet. To produce safe foods, maintain consumer confidence, and advance human health, both risks and benefits associated with these microorganisms must be managed throughout the entire food production chain that includes primary production, processing and storage, and culminates with human consumption and health. Food safety can be widened to encompass not just bacterial but also viral and chemical risks to the food production chain. For that reason, the MiFoSaPLUS Researcher Community (RC) has been formed by extending the research and doctoral education activities of the ~100 members of the Academy of Finland (AF)-funded Center of Excellence in Microbial Food Safety Research (CoE-MiFoSa) (2008–2013) with 4 other research groups from the involved Departments of Veterinary Biosciences and Food Hygiene and Environmental Health (Faculty of Veterinary Medicine). The ~25 newly added members of the RC cover expertise in virology, toxicology, and epidemiology, and immunology and share the interdisciplinary research goals pursued in the existing CoE-MiFoSa. The resulting RC includes a total of 10 professors and 11 lecturers who all participate in the teaching and training of the basic veterinary medical curriculum and practice the strong interaction between teaching and research. A 4-tiered plan for researcher career advancement is already built into the program structure of the existing CoE-MiFoSa that also includes a strong researcher training strategy as administered by the Ministry of Education. MiFoSaPLUS RC doctoral candidates are recruited both nationally and internationally and once accepted by the faculty each will embark on an approved academic research and study program that is guided by their supervisors. Our RC has an active program of doctoral education and postdoctoral training that involves international seminar program, training courses, troubleshooting seminars, journal clubs, invited lectures, and international conference meetings. At present, 58 doctoral candidates are being supervised and during 2005–2010 in our RC, 34 PhDs have graduated and 2 postdocs were promoted to full professors.



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

3 SCIENTIFIC FIELDS OF THE RC

Main scientific field of the RC's research: biological, agricultural and veterinary sciences

RC's scientific subfield 1: Veterinary Sciences

RC's scientific subfield 2: Food Science and Technology

RC's scientific subfield 3: --Select--

RC's scientific subfield 4: --Select--

Other, if not in the list:

4 RC'S PARTICIPATION CATEGORY

Participation category: 1. Research of the participating community represents the international cutting edge in its field

Justification for the selected participation category (MAX. 2200 characters with spaces): The overall scientific achievements of the MiFoSaPLUS RC during 2005–2010 are well-recognized worldwide and substantiated by a portfolio of >370 peer-reviewed papers, many in leading international scientific journals and some in top journals such as Lancet, PNAS, Gastroenterology, and Science, as well as frequent invitations to international scientific meetings. Further testifying to the excellence and international impact of the MiFoSaPLUS RC is the fact that the 5 senior group leaders have all h-index >25 and throughout their career published around 1000 peer-reviewed articles with >25,000 citations. Furthermore, the research output as well as strategy and leadership, from the senior MiFoSaPLUS RC groups has held up to international scrutiny and been praised in scientific research assessment reports commissioned by the UH and AF in 2005. All MiFoSaPLUS RC groups have had their research projects funded by the AF and one leader has received an ERC Advanced Grant and an Academy Professorship. Moreover, 5 of our RC groups were already recognized for excellence in the form of the AF funded CoE-MiFoSa, which represents the RC core and is highly international, encompassing members from at least 14 different countries. Hence, the RC is well positioned to be further recognized as a competitive member of the international research community. The scientific focus of the RC is on food safety and microbiology and has produced novel basic and applied research findings, which not only further nurtured an effective collaboration with the Finnish food industry but also augmented their overriding capacity to thrive in highly competitive international food production and processing markets. For instance, the improved understanding of psychrotrophic food-borne pathogens and spoilage bacteria resulted in innovative intervention strategies for offsetting food-related microbial risks. Moreover, by analyzing the host-microbe interactions in the intestinal tract, avenues for the producing and monitoring safe and healthy foods were developed. The prevailing goal of this RC is to produce high quality science with an open eye for the applications while providing top level training.

5 DESCRIPTION OF THE RC'S RESEARCH AND DOCTORAL TRAINING

Public description of the RC's research and doctoral training (MAX. 2200 characters with spaces): The omnipresent risk posed by bacteria, viruses, and chemicals throughout the food production chain must be



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

recognized and minimized to guarantee safe food products and consumer confidence. The MiFoSaPLUS RC, a truly international mix of 14 different nationalities, relies on the complementary expertise of veterinarians, microbiologists, molecular biologists, bioinformaticians, virologists, epidemiologists, and toxicologists and whose overriding scientific focal point is on food safety and microbiology and the protection of animal and human health. Pursued research topics from the molecular to cellular, organism, and population levels include 1) analyzing the role of intestinal microbiota and host-microbe interactions in health and disease and developing preventive actions against intestinal pathogens and disorders in human and animals; 2) advancing the molecular understanding of psychrotrophic LAB and their interaction with other bacteria in food spoilage; 3) exploiting the genetics of *Campylobacter* and *Helicobacter* spp. and study their evolution, ecology, epidemiology, and pathogenicity in different intestinal hosts, including human; 4) integrating the knowledge of the epidemiology, virulence and toxin production, and stress response mechanisms of food-borne pathogens (*Clostridium*, *Listeria*, and *Yersinia* spp.) so as to provide information needed by the food industry to combat these bacteria; 5) deciphering the mechanistic action of dioxin contaminants, and the like, found widespread in the human and animal food chain; 6) studying host-microbe interactions in bovine mastitis; 7) studying food-, water-, and vector-borne viral animal and zoonotic diseases; and 8) epidemiologic registry evaluation, e.g., bovine mastitis. Doctoral candidates, as members of major graduate schools, e.g., ABS, are admitted by the faculty and pursue an approved doctoral research and study program to meet degree requirements. Leading up to their doctorate, students will have their study and research progress regularly reviewed and they can attend organized lectures on theory, practical training courses, research seminars by international scholars, and literature review meetings.

Significance of the RC's research and doctoral training for the University of Helsinki (MAX. 2200 characters with spaces): The MiFoSaPLUS RC research program on Microbiology and Food Safety encompasses an interdisciplinary field of science that will provide the training needed for the next generation of UH professors and qualified food safety professionals operating at the local, government, and EU level and in the food production industry. The from-ground-to-gut research of the RC includes many key areas like the intestinal microbiota and host-microbe interactions, microbial food spoilage, psychrotrophic and spore-forming bacterial pathogens, food-borne viral diseases, host-pathogen interactions in bovine mastitis, epidemiologic registry evaluation, and the mechanistic action of environmental contaminants. Implementation of the results will have a great impact on the society by affecting food safety legislation as well as providing avenues for generating new food products with improved health and nutritional value. The RC will be an effective vehicle to maintain a high level of international competitiveness and excellence in research and training in the biology of microorganisms at UH. Moreover, it will provide an opportunity to increase the visibility of UH by its focus on all aspects of food safety. Finally, the high level of research quality and training opportunities will contribute to attracting internationally renowned scientists. It is evident that this will enhance the external funding from national and international sources. As a scientific platform for interactive exchange and contact between essential disciplines, the RC fosters an attractive environment for interdisciplinary scientific problem-solving relevant to modern food safety and microbiology research and thus supplies the knowledge-based underpinnings considered critical for the education of new scientists. The PhD education offered in the RC relies heavily on a strategy that ensures doctoral students acquire the professional skills of a highly trained, multi-disciplined, and independent-minded scientist. Many foreign doctoral students (14) and postdoctoral scientists (5) have also chosen to



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

study and work in this RC, thereby providing an indication of the scientific recognition from abroad gained by the UH.

Keywords: food safety

intestinal microbiota

host-microbe interactions

microbial food spoilage

psychrotrophy

food-borne pathogens

food-borne bacterial zoonoses

food-borne and emerging viral disease

food toxicology

bovine mastitis

dairy disease registry evaluation

(post- and meta-)genomics

6 QUALITY OF RC'S RESEARCH AND DOCTORAL TRAINING

Justified estimate of the quality of the RC's research and doctoral training at national and international level during 2005-2010 (MAX. 2200 characters with spaces): The overall quality of the research and doctoral training in the MiFoSaPLUS RC during 2005–2010 is exemplified by a publication portfolio of >370 peer-reviewed articles in leading international scientific journals, including the Lancet, PNAS, Gastroenterology, and Science, and by frequent invitations to international scientific meetings to present novel research findings. In 2005, the groups of the RC have been scrutinized and praised (7/7 maximum score) by international committees evaluating the quality of scientific research in both UH- and AF-sponsored assessments. Moreover, the core of the RC, formed by the AF nominated CoE MiFoSa (2008–2013), was recently given an outstanding 3-year interval assessment by the scientific advisory board and noted for its "motivation to conduct high quality and impactful research". Also, all RC groups have had their research projects funded by the AF and our toxicology group was part of the AF-funded CoE for Environmental Health Risk Analysis (2002–2007). RC groups are also provided with funding by Finnish government ministries as well as by EU-FP6 and -FP7 grants. Moreover, many RC team leaders have succeeded to obtain significant TEKES funding with high societal impact, such as the FiDiPro and many other projects involving relevant industrial partners. Other individual accomplishments of our RC include (1) awarding of a 5-year AF professorship and a 5-year ERC Advanced Grant, (2) the first published description of a pillated probiotic *Lactobacillus* spp., (3) obtaining the Topi Salmi scientific award and memberships in the Royal Swedish Academy of Agriculture and Forestry, the German National Academy of Sciences Leopoldina, and the Royal Netherlands Academy of Sciences and Arts, (4) the most-cited publication in the field of pharmacology and toxicology, and (5) awarding of a full professorship in dairy hygiene and a 5-year professorship specializing in food-borne bacterial zoonoses. The doctoral training is of high caliber and



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 1 MATERIAL (registration form)

promoted by the graduate schools in which RC members not only participate by organizing and lecturing in international courses, but several of whom are also involved in Marie Curie Training Networks.

Comments on how the RC's scientific productivity and doctoral training should be evaluated (MAX. 2200 characters with spaces): The targeted publishing strategy of the MiFoSaPLUS RC continues to be the dissemination of new and innovative research findings on food safety and microbiology in leading international journals with a strong and sustained readership in the assorted subfields of our RC. More specifically, we aim to publish research findings with a fundamental scientific impact as well as which leads to practical solutions for upholding food safety and public health. We suggest that the quality of publications produced by the RC should be rated by impact factor (IF) ranking and RC subfield size. In such an assessment, the size of each subfield topic can be taken into account by relating the IFs of RC publications with the averaged IFs of the subfield to which they belong. This can then be harmonized with the actual number of articles in peer-reviewed international scientific journals along with the h-index and citation-index indicators. The significance and value of the research output in its contribution to the theories, concepts, and understanding of the different RC subfields, as recognized by (inter)national awards, media interest, or key note lecture invitations can also serve to gauge scientific productivity. To assess the doctoral training program of the RC, factors that contribute to the professional career development of the candidate as a doctoral-level scientist should be considered. These may include the doctoral candidate's (1) quality of the doctoral thesis and the publications contained therein, (2) international mobility and contact with research groups located abroad, and (3) scientific visibility as indicated by attendance at international conference meetings. To provide an indication of how well doctorate holders use their acquired education and skills, follow up tracking information about their subsequent career progression should be obtained and evaluated. To demonstrate the internationality of the doctoral training program, the number of foreign doctorate holders, including their country of origin, that graduate from the RC should be assessed. Similarly, the impact of the doctoral training and the doctorate holders themselves on society should be monitored.

LIST OF RC MEMBERS

NAME OF THE RESEARCHER COMMUNITY:			EXTENDED CENTER OF EXCELLENCE IN MICROBIOLOGY AND FOOD SAFETY RESEARCH (CoE-MiFoSaPLUS)		
RC-LEADER			A. Palva		
CATEGORY			1		
	Last name	First name	PI-status (TUHAT, 29.11.2010)	Title of research and teaching personnel	Affiliation
1	Aarnikunnas	Johannes		Doctoral Candidate - Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
2	Bērziņš	Aivars		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
3	Björkroth	Johanna	x	Professor	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
4	Dahlsten	Elias		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
5	Derman	Yagmur		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
6	de Haan	Astrid		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
7	de Vos	Willem	x	Finland Distinguished Professor	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
8	Ekman	Anna		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
9	Fredriksson-Ahomaa	Maria	x	Professor	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
10	Gonzalez Jimenez	Manuel		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
11	Hannula (nee Laatu)	Minna		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
12	Heikinheimo	Annamari		Doctoral Candidate - University Lecturer	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
13	Hellström	Sanna		University Instructor/Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
14	Hynönen	Ulla		Doctoral Candidate - Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
15	Hänninen	Marja-Liisa	x	Professor	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
16	Hörman	Ari		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
17	Iivanainen	Antti	x	Professor	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
18	Jalanka-Tuovinen	Jonna		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
19	Johansson	Per		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
20	Junnikkala	Sami		Postdoctoral Researcher - University Lecturer	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
21	Juntunen	Pekka		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
22	Kallio	Eva		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
23	Kangas	Susanna		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
24	Kant	Ravi		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
25	Kantala	Tuija		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
26	Keto-Timonen (née Keto)	Riikka		Doctoral Candidate - University Lecturer	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
27	Kinnunen	Paula		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
28	Kirk	David		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
29	Kivistö (nee Kärenlampi)	Rauni		Doctoral Candidate - University Lecturer	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
30	Kolmeder	Carolin		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
31	Kondadi	Pradeep Kumar		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
32	Koort	Joanna		Doctoral Candidate - University Lecturer	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health, Department of Veterinary
33	Korkeala	Hannu	x	Professor	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
34	Krogus-Kurikka	Lotta		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
35	Laakso (née Salonen)	Laura		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
36	Laukkanen-Ninios (née Laukkanen)	Riikka		University Instructor/Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
37	Lepistö	Outi		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health

38	Liljavirta	Jenni		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
39	Lindén	Jere		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
40	Lindholm	Agneta		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
41	Lindström	Miia	x	Professor	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
42	Lunden	Janne		University Lecturer	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
43	Lundström	Hanna-Saara		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
44	Lyra (Kassinen)	Anna		Doctoral Candidate - Research Coordinator - Postdoctoral	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
45	Lähteinen	Tanja Lähteinen		University Instructor	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
46	Malinen	Erja		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
47	Marreiros Cabrita Revez	Joana		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
48	Mattila	Mirjami		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
49	Maunula	Leena	x	University Lecturer	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
50	Mohsina	Marzia		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
51	Murros-Konttinen	Anna		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
52	Nevas	Mari	x	Doctoral Candidate - University Lecturer	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
53	Nieminen	Timo		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
54	Nikkilä	Janne		University Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
55	Niku	Mikael		Doctoral Candidate -University Lecturer	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
56	Nylund	Lotta		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
57	Olkola	Satu		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
58	Ortiz Martinez	Pilar		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
59	Ossowski von	Ingemar		University Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
60	Palonen	Eveliina		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
61	Palva	Airi	x	Professor	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
62	Perko-Mäkelä	Päivikki		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
63	Pessa-Morikawa	Tiina		University Lecturer	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
64	Pietilä	Taija		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
65	Pohjanvirta	Raimo	x	Professor	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
66	Praakle-Amin	Kristi		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
67	Rahkila	Riitta		University Instructor/Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
68	Reunanen	Justus		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
69	Rimhanen-Finne	Ruska		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
70	Rintakoski	Simo		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
71	Rinttilä	Teemu		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
72	Rossi	Mirko		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
73	Rossow	Heidi		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
74	Ruusunen	Marjo		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
75	Rönnqvist	Maria		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
76	Salomäki	Tiina		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
77	Salonen	Anne		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
78	Satokari	Reetta		University Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences

79	Schott	Thomas		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
80	Selby	Katja		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
81	Summa	Maija		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
82	Säde	Elina		University Instructor/Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
83	Söderholm	Henna		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
84	Tolvanen	Riina		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
85	Vapalahti	Olli	x	Professor	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
86	Vilén	Heikki		Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
87	Virtala	Anna-Maija	x	University Lecturer	Faculty of Veterinary Medicine, Department of Veterinary Biosciences
88	Virtanen	Sonja		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
89	Zhang	Zhen		Doctoral Candidate	Faculty of Veterinary Medicine, Department of Food Hygiene and Environmental Health
90	Ävall-Jääskeläinen	Silja		Doctoral Candidate - Postdoctoral Researcher	Faculty of Veterinary Medicine, Department of Veterinary Biosciences



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

BACKGROUND INFORMATION

Name of the RC's responsible person: PALVA, AIRI

E-mail of the RC's responsible person:

Name and acronym of the participating RC: EXTENDED CENTER OF EXCELLENCE IN MICROBIOLOGY AND FOOD SAFETY RESEARCH, CoE-MiFoSaPLUS

The RC's research represents the following key focus area of UH: 5. Hyvinvointi ja turvallisuus – Welfare and safety

Comments for selecting/not selecting the key focus area: Food-borne diseases have a direct impact on the welfare of about 300,000 Finnish citizens per year and throughout the rest of the world, in particular the developing countries, the ensuing public health burden is even greater. Clinical manifestations of food-borne diseases include gastrointestinal symptoms that on occasion become chronic and life-threatening, possibly leading to serious disorders, cancer, or death. Also, microbial spoilage affects foods with high nutritional value and this kind of waste along with food spillage (~20kg/capita/year wasted in Finland) heavily shape the global carbon footprint. Consequently, food safety and quality, as well as developing strategies to improve intestinal well-being, are a serious concern for many consumers and food-producing industries as well as public health and regulatory agencies. Microbiology and food safety research, by providing fundamental knowledge about the various causative agents affecting both humans and animals, will directly benefit public health and welfare, and is at the forefront of the FVM and UH research strategy.

1 FOCUS AND QUALITY OF RC'S RESEARCH (MAX. 8800 CHARACTERS WITH SPACES)

• **Description of the RC's research focus, the quality of the RC's research (incl. key research questions and results) and the scientific significance of the RC's research for the research field(s).**

Our ~100-member RC is a mix of 14 nationalities and represents a multi-disciplinary team of scientists with varying levels of research background and expertise. The main research focus of the RC is on food safety, quality, and microbiology, with an emphasis geared toward the protection of food consumer and animal health, and is targeted to understand a broad range of biological concepts and problems at the molecular, genomic, cellular, organism and population levels. The scientific topics of this research focus that have been actively pursued are numerous and their quality and significance are provided as follows:

(1) **INTESTINAL MICROBIOTA AND HOST-MICROBE INTERACTIONS IN HEALTH AND DISEASE.** This entails a study of the role of intestinal microbiota and host-microbe interactions in health and disease and aims to develop preventive measures against intestinal pathogens and intestinal disorders in humans and animals. Some noteworthy results include the isolation of several pig-specific probiotic lactobacilli strains, the functional characterization (surface mapping) of the *L. brevis* S-layer protein domains, a breakthrough in the mechanistic understanding of probiosis by discovering mucus-specific piliation in *L. rhamnosus* GG (PNAS, 2009), the characterization of the irritable bowel syndrome related microbiota and their use for gauging health status (Gastroenterology, 2007), surveying the dynamics, diversity, and function of the human intestinal microbiota, and the use of functional (pan)genomics to understand mucus-interacting lactic acid and other bacteria.

(2) **SYSTEMIC APPROACHES TO ADVANCE A MOLECULAR UNDERSTANDING OF THE MICROBIAL ECOLOGY OF FOOD SPOILAGE.** Research is primarily focused on studying fermentative psychrotrophs, which represent the main spoilage bacteria isolated in cold-stored packaged foods, and attempts to produce knowledge about their diversity and taxonomy. A significant result so far obtained has been



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determining the genome sequence for the prominent food spoilage bacterium, *Leuconostoc gasicomitatum* 18811T, thus providing badly needed information for understanding the growth and reaction patterns of spoilage in foods. Ultimately, this knowledge as well as that from sequencing population metagenomes can be applied directly in the development of improved manufacturing practices and technologies that then help prevent bacterial food spoilage.

(3) UNDERSTANDING OF CAMPYLOBACTER AND HELICOBACTER GENETICS AND APPLICATIONS IN ANIMAL AND HUMAN INFECTIONS. This involves studying the phenotypic and genotypic characteristics of *Campylobacter* and *Helicobacter* spp. to reveal their phylogeny, pathogenesis, antimicrobial resistance, and epidemiology as zoonotic food- and water-borne and animal pathogens. Population genetic studies on *C. jejuni* strains (collected during 1996–2007) indicated the same predominant genotypes persist in human domestic infections (Finland) and that these genotypes did not always overlap with those from chickens. Source attribution studies revealed that chicken was not the primary source of human infections, but instead also included cattle, water, and an uncharacterized environmental source. Moreover, ongoing efforts to type *C. jejuni* strains from different sources using MLST and virulence-based methods will help lead to improved and more focused epidemiology and intervention strategies. In addition, the description of a water-borne source for human infections, combined with improvements in study methods, will serve as useful tools in the prevention of water-borne campylobacteriosis outbreaks.

(4) DIAGNOSTICS, MOLECULAR EPIDEMIOLOGY, FUNCTIONAL GENOMICS, AND PREVENTION OF PSYCHROTOPHIC AND/OR SPORE-FORMING FOOD-BORNE BACTERIA. Aims here are to integrate knowledge gained about the epidemiology, virulence and toxin production, and stress response mechanisms of food-borne pathogens (*Clostridium*, *Listeria*, and *Yersinia* spp.) and provide needed information to the food industry for designing control strategies against these pathogens and thus improve food safety and consumer health. Thus far, the use of detection and typing methods has advanced an epidemiologic understanding of such strains and helped in the development of rational and effective scientific approaches for protecting the consuming public. Also, important insights have been learned about how food-borne pathogenic bacteria develop strategies to survive in typical food processing and storage environments and will provide the needed information for designing novel solutions to improve food quality and safety.

(5) MOLECULAR MECHANISMS OF DIOXIN TOXICITY. Dioxins are potent environmental toxicants found widespread in the human and animal food chain, but as yet still exhibit an unknown mechanism of toxicity. Work here has furthered the understanding of the critical role played by the transcriptional AHR receptor (AHR) and its individual sub-domains in dioxin toxicity and revealed the extent of AHR involvement in physiological regulation of gene activity.

(6) HOST-MICROBE INTERACTIONS IN BOVINE MASTITIS. This involves dissecting the genetic virulence determinants of several bovine-specific mastitis pathogens and provides useful information in the development of diagnostics and vaccines and improving the quality and safety of dairy products. A related and important outcome was the characterization of the bovine immunoglobulin light chain gene pool in conjunction with the sequencing of the bovine genome (recently in *Science*, 2009).

(7) THE ROLE OF FOOD-, WATER-, AND VECTOR-BORNE VIRUSES WITHIN THE FOOD CHAIN. Aim here is to determine the transmission routes, mechanisms, and sources of human enteric pathogenic viruses during the early stages of the Finnish food chain. An important result thus far includes establishing river water as a potent source of noroviruses and adenoviruses, both of which were also shown to survive conventional wastewater treatments and be readily discharged into environmental waters.

(8) ZOONOTIC VIRAL DISEASES AND IMPLICATIONS FOR FOOD SAFETY. This targets viral infection, particularly those considered zoonotic (cross-species), and includes basic research that extends from the



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC STAGE 2 MATERIAL

characterization of natural reservoirs to the development of diagnostics, molecular epidemiology, host-virus interactions at cellular and organism level, and disease associations and pathogenesis.

(9) EPIDEMIOLOGIC REGISTRY EVALUATION AND VALIDATION. This work determines how well the registry for dairy cattle diseases (e.g., bovine mastitis) reflects the prevalence of disease in the field and if corrective modifications to the registry are needed. Overall, the quality of research by our RC during 2005–2010 is well-recognized worldwide and substantiated by a portfolio of >370 peer-reviewed papers, many of which are in leading international scientific journals (e.g., Lancet, PNAS, Gastroenterology, and Science). Further testifying to the merit and international impact of the RC scientific achievements is the fact that the 5 senior group leaders have all h-index >25 and throughout their career published around 1000 peer-reviewed articles with >25,000 citations. In 2005, some of the RC research groups have been scrutinized and praised (7/7 maximum score) by international committees that evaluated the quality of scientific research in both UH- and AF-sponsored assessments. Moreover, the core of the RC (CoE-MiFoSa) was recently given an outstanding 3-year interval assessment by the scientific advisory board and noted for its “motivation to conduct high quality and impactful research”. (See appdxs. IA&B.)

- **Ways to strengthen the focus and improve the quality of the RC’s research.**

The present revolution in DNA sequencing technologies and other high throughput approaches have a profound effect on the way research in life sciences is conducted, including food safety and microbiology research, where our RC has rapidly implemented a strong functional metagenomics program. Since the next essential step involves using statistical and informatics tools to help make sense of the rapidly accumulating microbial genomic data, leadership at the chair or other level in the area of microbial functional bioinformatics should be actively promoted. This would not only better support the research focus for national and international cooperation, but it would also improve the overall quality of our RC’s research program on food safety and microbiology. RC research focus and quality would also benefit from developing bioinformatics use as a core skill amongst all graduating PhDs, lowered overhead costs on grants, an effective system for sharing of research equipment and expertise, an accessible animal facility for toxicology studies, and closer links to clinical research.

2 PRACTISES AND QUALITY OF DOCTORAL TRAINING (MAX. 8800 CHARACTERS WITH SPACES)

- How is doctoral training organised in the RC? Description of the RC’s principles for recruitment and selection of doctoral candidates, supervision of doctoral candidates, collaboration with faculties, departments/institutes, and potential graduate schools/doctoral programmes, good practises and quality assurance in doctoral training, and assuring good career perspectives for the doctoral candidates/fresh doctorates.

The PhD education offered in the RC relies on a strategy that supplies the theoretical underpinnings considered critical for the training of new doctoral-level scientists so as to ensure each doctoral candidate acquires the professional skills of a highly qualified, multi-disciplined, and independent-minded scientific investigator specialized in modern food safety and microbiology research.

The research-focused doctoral training program in the RC, in which there are currently 58 doctoral candidates, is organized to provide each doctorate holder in the end with 3 tangible assets:

- (1) an academic education supported by research-to-work transitional skills,
- (2) a sufficiently broad understanding of advanced scientific theory, including those disciplines related to the field of research, and
- (3) guidance and advice on career planning and development.



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The RECRUITMENT of doctoral candidates follows an open call policy that is intended to attract the interest of highly motivated and scientific-minded applicants, both nationally and internationally. This is done through advertisements placed in international scientific journals, local newspapers, and web pages (e.g., university, doctoral program, FinBioNet, etc) and circulated amongst national/international networks of research contacts and colleagues. General instructions and regulations for doctoral studies are available to the public on the Faculty of Veterinary Medicine (FVM) website. Prospective applicants undergo a rigorous screening and selection process that includes interviews with senior research and teaching staff (professors, PIs, senior lecturers, postdoctoral scientists, etc) and is meant to establish their suitability for doctoral studies based on previous academic education and research training as well as future scientific leadership potential. Many of the doctoral candidates applying have scientific backgrounds in veterinary science, microbiology, molecular biology, virology, toxicology, bioinformatics, and epidemiology and strong research interests in food safety-related topics. Once accepted each successful applicant, together with the assistance of an academic supervisor, prepares a doctoral study and research plan and after administrative approval by the FVM council, will pursue a scientific research program under the appointed supervision of one or more senior PIs.

SUPERVISION takes the mentored form of regular discussions/meetings, joint project planning, grant application writing, and hands-on guidance in developing laboratory skills. It is also important that each doctoral candidate can rely on the scholarly support and advice of their supervisor should difficult academic or research problems arise unexpectedly. A thesis advisory committee, appointed on behalf of the doctoral candidate, will meet annually to gauge and monitor whether satisfactory supervision and progress are being achieved. Most doctoral candidates are also enrolled as members of major doctoral programs (e.g., ABS, VHGS, SYTYKE, etc), each of which have their own organized meetings, training seminars, and scheduled evaluations to better motivate and stimulate students in pursuing their PhD studies and training. FVM also has its own UH-sponsored doctoral studies program (3 students are funded currently) and enlists the aid of an on staff research coordinator to inform research/teaching staff regularly about different relevant activities and events (e.g., academic and training courses, research congress meetings, research seminars, etc).

Senior PIs in our RC are active COLLABORATORS and contributors to the educational component of these graduate schools and which, through organized meetings, seminars, and events, includes lecturing on their own work and fields of expertise. The RC has also been instrumental in the functioning of these doctoral programs, e.g., by the procurement of AF-funded support. Our RC also has its own active program of doctoral education and training, which involves organized lectures on theory and practical training courses (e.g., ABS/VLAG sponsored lecture and course program), research seminars by international scholars and invited lecturers, troubleshooting seminars, literature review meetings (journal clubs), and internationally attended conference meetings (e.g., The Annual Finnish Gut Day). Doctoral candidates are also allowed to attend courses and lectures offered outside of the FVM by other faculties and departments at the UH and elsewhere locally or abroad. Doctoral candidates in our RC can also expect ancillary practices and training that in the end add to the quality of their scientific skills and research portfolio. As an example, in our RC a great emphasis is placed on developing each doctoral candidate's ability to convey research findings convincingly and to interact/network with scientific peers. That being said, participation at public speaking events is strongly advised and encouraged and so as a PhD student ample opportunity for doing so is made routinely available. Generally included are presenting research data to colleagues during regular research group and department meetings, attending international meetings for poster and oral presentations, presenting at journal clubs and troubleshooting seminars, traveling to research collaborators to present research findings, lecturing and laboratory demonstrating to undergraduate students, and lecturing to members of the food industry and government departments and agencies.



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What's more, for PhD-level training the RC has also implemented those GOOD PRACTICES that are an integral part of the curriculum of several top national graduate schools. The intended goal is to provide doctoral candidates with a high-quality science education while producing new and innovative research findings that are recognized as a fundamental scientific impact and published in leading international journals. Also, a 4-tiered plan for researcher career advancement is built into the RC doctoral program, one which also follows a strong researcher training strategy as recommended by the Ministry of Education. To further instill top-level quality doctoral training in our RC, a policy of admission testing and joint recruitment of applicants, found in many doctoral programs and, to a certain extent, within the 4-team CoE-MiFoSa collaboration, is under active consideration. Because the number of senior scientists has increased during the first 3-years of the CoE-MiFoSa research program there was a significant improvement in the level of supervision and time spent with doctoral students, thereby conferring a distinct educational advantage to the RC as a whole. Recently, 2 postdoctoral scientists in our RC have been promoted to full professors. At present, Finnish and world-wide demand for highly trained and qualified food safety professionals outstrips the existing supply of new doctoral holders. During 2005–2010, 34 PhD students have graduated from the RC, many of which have found excellent career opportunities within academia and the health, government, and industry sectors. As an example, several doctoral holders trained by our RC have been hired as experts by various national and international food safety and health authorities. As far as future career prospects go, we expect a similar trend to continue for the next generation of doctoral candidates.

Ultimately, assuring a good CAREER PERSPECTIVE for doctoral candidates is underscored by the experienced advice and counseling of supervisors in our RC, which often takes the form of advanced selection of academic courses and final planning of the research focus. (See appdx. IIA.)

- RC's strengths and challenges related to the practises and quality of doctoral training, and the actions planned for their development.
Key strengths of the RC include (1) the ability to attract a highly motivated international mix of doctoral candidates, (2) an organization of multi-disciplinary research groups encompassing different levels of expertise in research, training, and education, and thus providing the advantage of cooperative exchange of varied skills and knowledge, (3) a strategically structured and well-organized plan for doctoral training and career development, and (4) active research collaboration with other groups and departments outside of the RC. The most pressing challenges include (1) the promotion of international networking amongst doctoral candidates, which in most instances can be remedied by increasing the number of short or long term visits to other research groups abroad and (2) circumventing the "bottleneck" transition to independent postdoctoral/senior scientist by encouraging and mentoring doctoral candidates in the preparation of successful grant funding applications during their PhD studies to assure their future competitiveness in academia.

3 SOCIETAL IMPACT OF RESEARCH AND DOCTORAL TRAINING (MAX. 4400 CHARACTERS WITH SPACES)

- Description of how the RC interacts with and contributes to the society (collaboration with public, private and/or 3rd sector).
Amid the potential health risks to society posed by bacteria, viruses, and chemicals throughout the entire food production chain, both food safety and quality rank as a serious concern for many consumers and food producers. A range of changes and adjustments in food production and control (globalization of food trade and markets, introduction of large-sized domestic and international farming and food processing plants, and modernization and upgrading of food production and processing methods) are at the forefront of new challenges and problems in food safety that currently face



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scientific study and if left unresolved threatens public health and welfare. As an additional research challenge, due to consumer demand for minimally processed products and a sustainable food system, preventing food spillage requires a better understanding of the microbial ecology of spoilage. In this context, our RC, whose primary scientific focus is on food safety and microbiology, strives to produce research-derived knowledge in several key areas (intestinal microbiota and host-microbe interactions, microbial food spoilage, psychrotrophic and spore-forming bacterial pathogens, food-borne viral diseases, host-pathogen interactions in bovine mastitis, epidemiologic registry evaluation, and the mechanistic action of dioxins), which not only will add to a greater understanding of animal and human health protection, but will also assist the Finnish food industry in their efforts to guarantee safe food products and consumer confidence. Our RC maintains close collaborative ties with several companies in the food and other related industries (Valio, Danisco, Raisio, Fazer, Atria, HK-Ruokatalo, Ruoka-Saarioinen, Orion, Red Cross Blood Service, AstraZeneca, Reagen, Mobidiag, and Vulcanus) as well as different government agencies (THL and Evira) and local associations (Fur Breeding Association) and municipal authorities throughout Finland. This contributes to an essential part of our interdisciplinary research goals to provide novel and effective solutions to food safety and quality. As a direct outcome, important scientific findings of the RC have had a positive socio-economic impact and have helped lead to key improvements in sanitation and hygiene in the food processing sector, the modification of food processing practices to avert food spoilage and improve shelf-life stability, the development of innovative approaches to prevent food-borne disease/bacteria outbreaks in humans, advance the knowledge for emerging diagnostic tools to detect harmful food-borne bacteria and for generating new food products with improved health and nutritional value, and in the drafting of legislation for new food safety regulations needed at a national and EU level. Senior RC PIs interact actively with the rest of society through membership on numerous national boards and expert advisory and steering committees, providing expert opinions and interviews to various media outlets, giving public lectures and presentations, organizing public workshops, and disseminating important research findings as press releases, in local Finnish journals and newspapers, in regular meetings with food safety authority agencies, and in an annual research seminar "tailor-made" for food industries.

- Ways to strengthen the societal impact of the RC's research and doctoral training.
In an effort to increase industry-readiness amongst PhD graduates from our RC, we propose a new doctoral program that is shared with partners from the food and food-related industries. By doing this, each doctoral holder will graduate with research training that encompasses a broader education, is more strongly geared towards industry needs, and thus provides a more immediate benefit to society as a whole. Some existing models of similar doctoral programs are already in place in Finland and elsewhere abroad. As a further active means to increase the societal impact of our RC we recommend the participation as members of expert advisory committees at the EU level, the implementation of an annual day of doctoral student presentations free and open to the general public, the creation of a regular forum (e.g., seminar series, web page, etc) to keep the general public advised about new and important RC scientific findings, and that a greater focus be placed on increasing the number of collaborative research projects with industry by procuring more funding from Tekes.



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4 INTERNATIONAL AND NATIONAL (INCL. INTERSECTORAL) RESEARCH COLLABORATION AND RESEARCHER
MOBILITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC's research collaborations and joint doctoral training activities and how the RC has promoted researcher mobility.
As a means to broaden the scope and impact of scientific and technological cooperation on food safety and microbiology research activities, all senior investigators of the RC follow an active policy of pursuing national and international research collaborations in their field of study. Collectively, the RC has built and maintained a collaborative research network that includes scientists and food safety professionals both locally (Helsinki, Kuopio, and Turku) and from many EU countries (AT, BE, CZ, DK, EE, FR, DE, IE, IT, NL, SI, ES, SE, and UK) and other parts of the world (Canada, China, Japan, Morocco, NO, Switzerland, and USA). These collaborations, which extend to a variety of research organizations such as universities and research institutes, health and welfare institutes, food safety authority agencies, municipal government authorities, food-based industries, and military defense forces, have forged strong working and multi-disciplinary relationships on variously funded (AF, Tekes, EU, industry, and public/private foundations) research projects, as evident by many joint publications in international journals. In order to ensure an adequate researcher mobility component to the PhD education program, especially for joint scientific and technical training activities and promoting early career contacts with scientific peers, the RC readily encourages short- and long-term exchanges and visits to other research groups and laboratories, locally in Finland and elsewhere abroad (Canada, FR, DE, India, IE, NL, NO, and SE), amongst its doctoral candidates, but postdoctoral/senior scientists as well. Also, as part of RC doctoral training, early and continuing participation at national or international scientific meetings and conferences is given top priority and all doctoral candidates are strongly urged to attend such events at least once a year. The needed financial support for costs associated with these trips is generally made possible by using existing grant funding or by making specific requests for traveling grants from the UH or AF. As further fostering the exchange of new ideas and developments in food safety and microbiology for the education of doctoral candidates and others so interested, the RC, through the CoE-MiFoSa, has sponsored a regular seminar series that includes distinguished national and international (BE, DE, FR, IE, NL, SE, and USA) speakers, each of whom has provided a scholarly description of their most recent scientific discoveries and achievements. Through ABS doctoral program-linked collaboration with the Dutch VLAG, Swedish LiFT, and 3 Danish graduate schools, our RC extends further opportunity amongst PhD students for international courses and peer contact activity. Moreover, each senior investigator of the RC has frequently played host to visiting scientists and scientific delegations from various countries for peer-to-peer meetings that include participation of research group members such as doctoral candidates. Since regular communication of research data and scientific planning are imperative for the successful outcome of collaborative projects, modern and innovative approaches, like conference calling and skyping, are often used when traveling is not possible or inconvenient. (See appdx. IIB.)
- RC's strengths and challenges related to research collaboration and researcher mobility, and the actions planned for their development.
RC strengths for collaborative research include (1) a shared scientific focus on food safety and microbiology, which enables a strong and common vision for developing strategic policy on doctoral research training and education and, most particularly, promotion of researcher mobility, (2) the ability to network with top-in-the-field scientific investigators over a sustained period of many years both internationally and nationally, providing strong continuity to research goals/planning and later in career opportunity for pursuing postdoctoral studies elsewhere abroad, and (3) a rapidly growing presence of international PhD students (~25%) and scientists (~20%), which not only increases overall diversity, but



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the capacity to expand international cooperative research networks as well. However, despite strong willingness and eagerness on part of doctoral candidates to go abroad for technical training/visits, difficulties related to obtaining financial support sometimes remain a challenge, but in general are usually overcome by exploring and extracting all possible sources of funding.

5 OPERATIONAL CONDITIONS (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the operational conditions in the RC's research environment (e.g. research infrastructure, balance between research and teaching duties).
The RC is comprised of members from the Department of Veterinary Biosciences (DVB) and Department of Food Hygiene and Environmental Health (DFHEH), both of which are affiliated with the FVM and located in a recently constructed research and education facility (EE Building) at the multidisciplinary biosciences Viikki campus of the University of Helsinki. The RC research infrastructure, which includes modern laboratories and lecture halls, state-of-the-art new equipment and instruments, networked computing capability, ancillary research services, and administrative overhead, is well-equipped to provide the needed support for research and teaching personnel and for an active doctoral research training and education program. Core research facilities needed for conducting molecular biological studies in food safety and microbiology are housed in the same building, providing easy accessibility to the RC. This then also assures the cost-effective use of equipment and staff and helps foster an environment for highly productive collaborative research activity and training. The RC maintains direct access to in-house experimental food manufacturing facilities, which readily permits conducting in situ experiments with food-borne pathogen and spoilage bacteria for practical microbiological risk assessments in different foods. Resources, expertise, and tools for specific research tasks in functional genomics, proteomics, and systems biology (e.g., real-time qPCR, DNA sequencing, microarray analysis, and RNA and protein analyses) are available to the RC either on site or nearby on the Viikki campus. Moreover, in-house facilities for necropsy work, histopathology, and cell culture are present and a biosafety level-3 laboratory and modern flow cytometry equipment are available to the RC. Due to the Viikki campus location of the RC, collaborative work with other research groups in the different bioscience fields and at the recently relocated national Food Safety Authority (Evira) is opportune and normally undertaken. Teaching duties within the RC are normally the responsibility of professors and lecturers and entail providing required theory for the various subject topics of the undergraduate (and graduate) veterinary course curriculum. Some undergraduate teaching also involves the participation of senior/postdoctoral scientists and PhD students (but not more than 5% of time allocated for conducting research) and serves as valuable pedagogical training for their future careers in academia. Despite courses and lectures being offered periodically during different parts of the academic year, an active research program that includes the supervision of PhD students is sometimes impacted negatively because the majority of the UH-mandated 1600-hour total working time is required for teaching, administrative, and other duties. Those senior investigators that have been awarded an Academy of Finland professorship are allowed to focus fully on research, thus also affording more time and attention for research training of doctoral candidates. Moreover, because the FVM underwent administrative centralization during 2010 the ability of the RC to financially reward top-performing researchers has now become less flexible and more restrictive.
- RC's strengths and challenges related to operational conditions, and the actions planned for their development.
The RC operational conditions for a balanced research and teaching program, which include well-equipped and well-operated core research facilities inside the same building location or nearby on the



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biosciences Viikki campus, are a strong foundation for conducting productive collaborative research and providing doctoral-level research training and education. Despite this, certain challenges exist, such as the need for (1) an onsite national center with platform technologies for microbial genome sequencing and functional bioinformatic analysis, (2) an animal containment facility equipped for toxicological research (built nearby in 2012), (3) an administrative unit that handles all pertinent matters related to research contracts, thus freeing up time for senior PIs to better focus on research and teaching, (4) lessening the load of mounting UH-mandated administrative duties, and (5) a forum (webpage) for supplying information about all accessible research equipment and instruments. Some of the aforementioned might be achieved by lobbying for policy changes and redirection of funding.

6 LEADERSHIP AND MANAGEMENT IN THE RESEARCHER COMMUNITY (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the execution and processes of leadership in the RC, how the management-related responsibilities and roles are distributed in the RC and how the leadership- and management-related processes support high quality research, collaboration between principal investigators and other researchers in the RC, the RC's research focus and strengthening of the RC's know-how. Our RC includes two departments (DVB and DFHEH), an AF-funded center of excellence (CoE-MiFoSa) with steering committee, and a PI-led doctoral program and thus maintains a well-organized and well-defined decision-making structure and process for mandating effective leadership on management and administrative actions. Regular meetings (e.g., departmental, group leader, teaching staff, and research group) are held to formulate and communicate administrative decisions, to update and share new information (university policy changes, equipment acquisitions, etc), and to discuss and resolve any general grievances amongst staff. It is common practice that all RC members participate actively on all relevant matters and that duties are a shared responsibility. In the RC, which is comprised of professors, lecturers, senior/postdoctoral scientists, PhD students, and administrative staff, those senior PIs with their own research groups are directly responsible for the leadership and management of their respective personnel, including scientific and financial matters. For instance, each PI is accountable that sufficient research progress is being achieved and according to departmental and/or grant-funded budgetary constraints. All PIs aim to provide the needed leadership for implementing excellence in both scientific research and doctoral research training and education. Most PIs have/had various types of duties and obligations in Finland or elsewhere abroad (expert peer-review and evaluation tasks, sitting on advisory boards for universities and government bodies, etc) and reflect their trusted status as experienced leaders and members of the international scientific community. Other major leadership and management responsibilities undertaken by some senior PIs in the RC include (present and past) those of university vice-rector (UH), faculty vice dean (FVM), department head (DVB and DFHEH), doctoral program director, and CoE-MiFoSa program leader/deputy leader.

As a means to support a high quality research program, all PIs have developed, through their past/present senior duties and responsibilities, effective scientific leadership skills and expertise for (1) obtaining public/private grant funding of research projects and/or research consortia, (2) acquiring and managing motivated research and teaching personnel, and (3) handling finances and administration of a large-sized research budget.

Scientific cooperation in the RC between the PIs and other research personnel is managed through regular meetings, either peer-to-peer or as a group, and often involves discussions on research progress and future project planning and directions. The overall scientific leadership and management infrastructure and the unified research focus of the RC go hand-in-hand to strengthen support for research and researcher training in the field of food safety and microbiology and, through jointly run and managed research projects, doctoral programs, teaching, (seminar series, courses, and lectures),



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and scientific meetings and retreats, helps facilitate the exchange and cross-fertilization of pertinent ideas and research know-how.

- RC's strengths and challenges related to leadership and management, and the actions planned for developing the processes.

Key RC strengths include

- (1) effective scientific leadership skills and expertise amongst senior PIs (acquired through their past/present highly demanding senior research and administrative duties),
- (2) a highly organized decision-making structure and process,
- (3) a well-defined and clear set of instituted rules and guidelines for leadership actions, responsibilities, and accountability, and
- (4) a good mix of senior and early stage career PIs for providing continuity and dynamism.

The greatest RC challenge is coping with the need for effective feedback, services, and support on research grant and departmental financial matters and the mounting load of UH-mandated administrative duties (e.g., Sole, SAP). Planned RC actions include

- (1) encouraging early stage career PIs (postdoctoral/senior scientists) to participate in management/leadership courses offered by the UH,
- (2) promoting an active mentoring program on leadership and management amongst senior research staff, and
- (3) continuing to maintain a desirable working environment for attracting new doctoral candidates and scientists.

7 EXTERNAL COMPETITIVE FUNDING OF THE RC

- Listing of the RCs external competitive funding, where:
 - the funding decisions have been made during 1.1.2005-31.12.2010, and
 - the administrator of the funding is/has been the University of Helsinki
- Academy of Finland (AF) - total amount of funding (in euros) AF has decided to allocate to the RC members during 1.1.2005-31.12.2010: 5283930
- Finnish Funding Agency for Technology and Innovation (TEKES) - total amount of funding (in euros) TEKES has decided to allocate to the RC members during 1.1.2005-31.12.2010: 3461400
- European Union (EU) - total amount of funding (in euros) EU has decided to allocate to the RC members during 1.1.2005-31.12.2010: 1750398
- European Research Council (ERC) - total amount of funding (in euros) ERC has decided to allocate to the RC members during 1.1.2005-31.12.2010: 0
- International and national foundations – names of international and national foundations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
 - names of the foundations: Walter Ehrström Foundation
 - Maj and Tor Nessling Foundation
 - Yrjö Jahnsson Foundation



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- Finnish Veterinary Foundation
- total amount of funding (in euros) from the above-mentioned foundations: 199300

- Other international funding - names of other international funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
 - names of the funding organizations: AstraZeneca
 - Nordic Joint Committee for Agricultural Research
 - total amount of funding (in euros) from the above-mentioned funding organizations: 155000

- Other national funding (incl. EVO funding and Ministry of Education and Culture funded doctoral programme positions) - names of other national funding organizations which have decided to allocate funding to the RC members during 1.1.2005-31.12.2010, and the amount of their funding (in euros).
 - names of the funding organizations: Ministry of Agriculture and Forestry
 - Ministry of Defense
 - Ministry of Education
 - Faculty of Veterinary Medicine
 - University of Helsinki/The University of Helsinki Research Fund
 - The Hospital district of Helsinki and Uusimaa EVO/HUCH
 - Finnish Scientific Advisory Board for Defense (MATINE)
 - total amount of funding (in euros) from the above-mentioned funding organizations: 4233200

8 RC'S STRATEGIC ACTION PLAN FOR 2011–2013 (MAX. 4400 CHARACTERS WITH SPACES)

- Description of the RC's future perspectives in respect to research and doctoral training.

Our RC has an ambitious program of research and doctoral training planned for the years 2011–2013. The completion of all ongoing research projects, training of current PhD students, and application of new research funding are continuity requirements in each RC team. In addition, the RC also intends to further develop and strengthen the well-established and ongoing research cooperation within the RC. There are several other new initiatives that involve research, grant funding, management, and doctoral training that the RC plans to embark on during these next few years. For instance, during the past and more recently (2005–2010), the RC has developed a strong and profound expertise in bacterial genetics and molecular biology by embracing new DNA sequencing technologies and pursuing several genome sequencing projects. However, with the onslaught of raw genomic information that needs not only effective data handling and management, but also functional analyses, a new set of challenges and opportunities has emerged for the RC research and doctoral training program. In the long term, more experienced bioinformatics specialists would be needed, but as an immediate solution, the RC will now put a greater emphasis as a whole on bioinformatics and ensure that use of its tools amongst all researchers is a core part of their research portfolio. More specifically, since the field of genomics has created new and interesting opportunities for the RC in the areas of food safety/quality and human intestinal health, and in part to complement existing metagenomics research, a program of metatranscriptomic research will be implemented to study the function and structure of complex microbial ecosystems such as those commonly found, e.g., in the behavior of food-borne pathogens, during food spoilage, within the human GI tract, and as host-pathogen interactions of mastitis. Ultimately the goal here is obtain enough supportive metatranscriptomic information, which, in concert with meta-metabolomics and metaproteomics data, can be used for developing a systems biology



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approach to generate microbial community models that will then help unravel key bacterial networks of competition, cooperation, and contact, and thus give a better and more detailed understanding about specific biological concepts and problems in food safety/quality and microbiology. Aside from current research grants and upcoming individual grant applications, financial support for this research initiative will also be provided as part of request to the AF for a new AF-funded research program focused specifically on food safety/quality issues.

Other RC research and research-related initiatives include

- (1) establishing new research partnerships/alliances locally at the university and industry level (e.g., Tekes-funded collaborative project on food spoilage with the Technical University of Tampere and several food packaging companies and various research projects with other members of the virology community at the Viikki campus),
- (2) actively pursuing enlargement of international research networks and improving the dissemination of the RC research findings both nationally and internationally,
- (3) providing input about RC research findings to the Finnish food industry, which, now globalized and having a major market share in the various countries of the Baltic Sea region, has an increased responsibility to ensure food safety/quality at the international level, and
- (4) strengthening of the impact and role of epidemiology and biostatistics in the FVM by developing more cooperation with other FVM-, Viikki-, and Kumpula-based research groups as well as those elsewhere and applying for a Tekes-funded FiDiPro professorship in epidemiology.

At the faculty level, the RC interests are not afforded the priority they require or deserve, even though the RC is at the forefront of FVM and UH key research strategy and contains an established CoE. To remedy this situation, the RC will engage in proactive dialogue with the FVM leadership and lobby for needed changes in faculty management decisions. RC doctoral training initiatives include developing a shared academic-food industry doctoral program and continuing the policy and strategy of 4-tiered career development, which will also include an official request to the UH for new tenure-track FVM professorships.

9 SHORT DESCRIPTION OF HOW THE RC MEMBERS HAVE CONTRIBUTED TO THE COMPILATION OF THE STAGE 2 MATERIALS (MAX. 1100 CHARACTERS WITH SPACES).

Following meetings and discussions about strategy and planning about how best to approach compiling the stage 2 materials for the UH evaluation submission, each of the senior group leaders in the RC assessed the stage 2 queries and provided answers, suggestions, and ideas from the perspective of their individual research programs. This information was compiled together and under the direction of the responsible leader of the RC was edited and corrected, and, following further input from the other RC senior leaders, a finalized version was then produced and submitted.

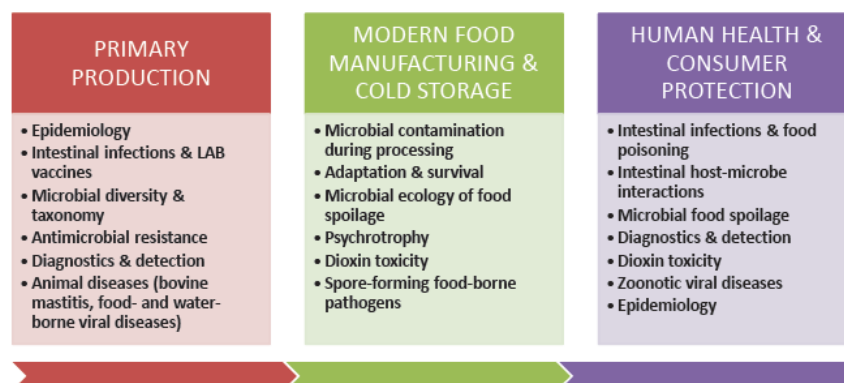
Appendix-IA

CoE-MiFoSaPLUS: Extended Center of Excellence in Microbiology and Food Safety Research

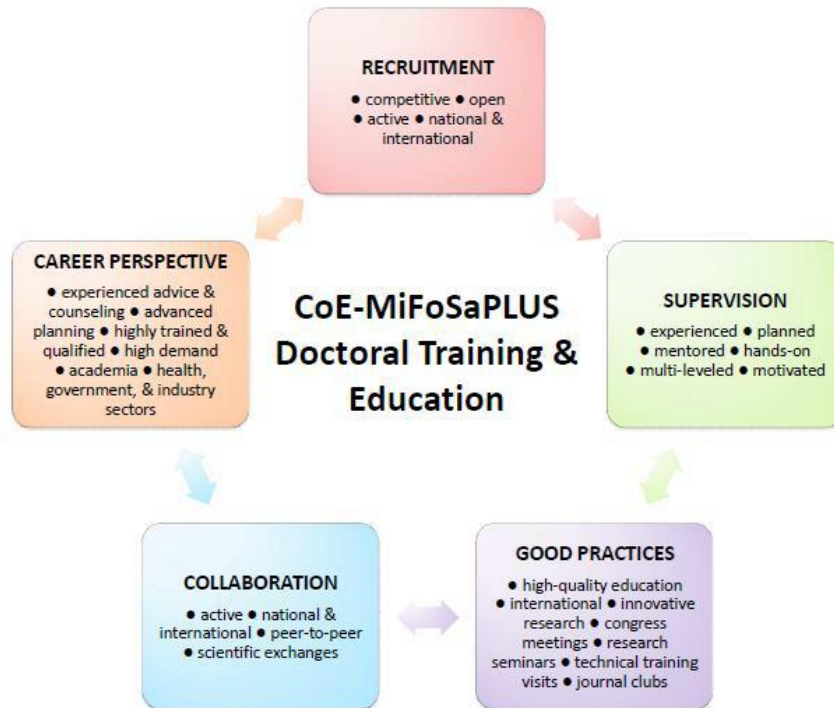


Appendix-IB

CoE-MiFoSaPLUS Research Focus on the Food Chain



Appendix-IIA



Appendix-IIB

CoE-MiFoSaPLUS Research Cooperation





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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

CoE-MiFoSaPLUS/Palva

1 Analysis of publications

- Associated person is one of Johannes Sakari Aarnikunnas , Aivars Berzins , Johanna Björkroth ,
Elias Dahlsten , Yagmur Derman , Astrid de Haan ,
Willem Meindert Vos de , Anna Ekman , Maria Fredriksson-Ahomaa ,
Manuel Gonzalez Jimenez , Minna Hannula , Annamari Heikinheimo ,
Sanna Hellström , Ulla Hynönen , Marja-Liisa
Hänninen , Ari Hörman , Antti Ilvanainen ,
Jonna Kaarina Jalanka-Tuovinen , Per Johansson , Sami
Junnikkala , Pekka Juntunen , Eva Kallio, Susanna Kangas ,
Ravi Kant , Tuija Kantala ,
Kivistö , Riikka Keto-Timonen , Paula Kinnunen , David Kirk ,
Carolyn Adriane Kolmeder , Hannu Korkeala , Lotta Kaisa Krogius-Kurikka ,
Laura Laakso , Riikka Laukkanen-Ninios , Joanna Koort ,
Outi Lepistö , Jenni Maria Liljavirta , Jere Lindén ,
Agneta Lindholm , Miia Lindström , Janne Lunden ,
Tanja Tuulikki Lähteinen , Erja Satumäki Malinen ,
Joana Revez , Mirjami Mattila , Leena Maunula , Anna
Murros-Konttinen , Mari Nevas , Timo Nieminen , Janne Tapio Nikkilä ,
Satu Olkkola , Mikael Niku , Lotta Nylund ,
Eveliina Palonen , Pilar Ortiz Martinez , Ingemar von Ossowski ,
Airi Palva , Tiina Inkeri Pessa-Morikawa ,
Riitta Rahkila , Taija Pietilä , Raimo Pohjanvirta ,
Ruska Rimhanen-Finne, Simo Rintakoski , Heidi Elina Rossow , Teemu Matias Rinttilä ,
Mirko Rossi , Maria Rönnqvist , Tiina Salomäki ,
Anne Salonen , Reetta Maria Satokari ,
Elina Säde , Katja Selby , Maija Summa ,
Heikki Gunnar Vilén , Henna Söderholm , Olli Pekka Vapalahti ,
Zhen Zhang , Anna-Majja Kristiina Virtala , Sonja Virtanen ,
Silja Ävall-Jääskeläinen ,

Publication type	Publication year						Total Count 2005 - 2010
	2005	2006	2007	2008	2009	2010	
A1 Refereed journal article	40	51	51	52	73	58	325
A2 Review in scientific journal	2	3	2			4	11
A3 Contribution to book/other compilations (refereed)	3	4	2	3	2	5	19
A4 Article in conference publication (refereed)	5	1	2	1		2	11
B1 Unrefereed journal article	3	3	5	6	15	10	42
B2 Contribution to book/other compilations (non-refereed)	1					1	2
B3 Unrefereed article in conference proceedings						3	3
D1 Article in professional journal			1	1	3	3	8
D2 Article in professional hand or guide book or in a professional data system, or text book material			68			2	70
D3 Article in professional conference proceedings	3	2	4	3	3	4	19
D4 Published development or research report	1		1			1	3
D5 Text book or professional handbook or guidebook or dictionary			1	1	1	1	4



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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

CoE-MiFoSaPLUS/Palva

Publication type	2005	2006	2007	2008	2009	2010	Total Count 2005 - 2010
E1 Popular article, newspaper article	12	16	5	5	8	1	47
H1 Patents						2	2



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RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

CoE-MiFoSaPLUS/Palva

2 Listing of publications

A1 Refereed journal article

2005

- Björkroth, J, Ristiniemi, M, Vandamme, P, Korkeala, H **2005**, 'Enterococcus species dominating in fresh modified-atmosphere-packaged, marinated broiler legs are overgrown by *Carnobacterium* and *Lactobacillus* species during storage at 6 °C', **International Journal of Food Microbiology**, vol 97, no. 3, pp. 267-276.
- Han, X, Juceviciene, A, Uzcatogui, NY, Brummer-Korvenkontio, H, Zygtiene, M, Jääskeläinen, A, Leinikki, P, Vapalahti, O, Uzcatogui, N **2005**, 'Molecular epidemiology of tick-borne encephalitis virus in Ixodes ricinus ticks in Lithuania', **Journal of Medical Virology**, vol 77, no. 2, pp. 249-256.
- Helkinheimo, A, Korkeala, H **2005**, 'Multiplex PCR assay for toxinotyping *Clostridium perfringens* isolates obtained from Finnish broiler chickens', **Letters in Applied Microbiology**, vol 40, no. 6, pp. 407-411.
- Helanto, M, Aarnikunnas, JS, Weymar, NV, Airaksinen, U, Palva, A, Leisola, M **2005**, 'Improved mannitol production by a random mutant of *Leuconostoc pseudomesenteroides*', **Journal of Biotechnology**, vol 116, no. 3, pp. 283-294.
- Hänninen, M, Hörman, A, Rimhanen-Finne, R, Vahtera, H, Malmberg, S, Herve, S, Lahti, K **2005**, 'Monitoring of *Cryptosporidium* and *Giardia* in the Vantaa river basin, southern Finland', **International Journal of Hygiene and Environmental Health**, vol 208, no. 3, pp. 163-171.
- Hänninen, M, Kärenlampi, R, Koort, J, Mikkonen, T, Björkroth, J **2005**, 'Extension of the species *Helicobacter bilis* to include the reference strains of *Helicobacter* sp. flexispira taxa 2, 3 and 8 and Finnish canine and feline flexispira strains', **International Journal of Systematic and Evolutionary Microbiology**, vol 55, no. 2, pp. 891-898.
- Hörman, A, Nevas, M, Lindström, M, Hänninen, M, Korkeala, H **2005**, 'Elimination of botulinum neurotoxin (BoNT) type B from drinking water by small-scale (personal-use) water purification devices and detection of BoNT in water samples', **Applied and Environmental Microbiology**, vol 71, no. 4, pp. 1941-1945.
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D4 Published development or research report

2005

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2007

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2010

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D5 Text book or professional handbook or guidebook or dictionary

2007

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2010

Hallikainen, A, Rautala, T, Karlström, U, Kostamo, P, Koivisto, P, Pohjanvirta, R, Hietaniemi, V, Rajakangas, L, Tuomaala, V, Kankaanpää, H, Verta, M, Kostiaainen, E, Kurtio, P, Turtiainen, T, Kiviranta, H, Komulainen, H, Rantakokko, P, Viluksela, M, Niemi, E, Nuotio, K, Siivinen, K **2010**, *Elintarvikkeiden ja talousveden kemialliset vaarat: Uudistettu painos*, **Eviran julkaisuja, no. 15/2010, Evira, Helsinki**.



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

CoE-MiFoSaPLUS/Palva

E1 Popular article, newspaper article

2005

- Ekman, A 2005, 'Nobelistiksi ilman menetelmähienostelua', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 13, pp. 7.
- Korkeala, H 2005, 'Tutkimus varmistaa elintarviketurvallisuutta', **Kaari pelloilta pöytään**, vol 4, no. 6, pp. 31.
- Niku, M 2005, 'Mutantti juo maitoa', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 5, pp. 2.
- Niku, M 2005, 'Syöpää kantasoluista?', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 12, pp. 7.
- Niku, M 2005, 'Kantasoluja lehmistä', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 8, pp. 52.
- Niku, M 2005, 'Replikonit täyttivät maan', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 7, pp. 2.
- Niku, M 2005, 'Pelastakoon tiede maailman', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 12, pp. 12.
- Niku, M 2005, 'Lituruoho rikkoo Mendelin lakia', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 7, pp. 23.
- Niku, M 2005, 'Kantasolukin väsy vanhuuttaan', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 10, pp. 9.
- Niku, M 2005, 'Geenit kuriin', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 53, no. 14, pp. 21.
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2006

- Ekman, A 2006, 'Tutkija termin takana', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 2006, no. 7.
- Ekman, A 2006, 'Vessahätä ja muita vesihuollon kysymyksiä', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 2006, no. 1.
- Niku, M 2006, 'Pakkotyötä pesässä', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 5, pp. 8.
- Niku, M 2006, 'Entistä vahvempi bakteeri', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 12, pp. 6.
- Niku, M 2006, 'Oivaa hoivaa koe-eläimille', **Yliopistolainen : Helsingin yliopiston henkilöstölehti**, vol 2006, no. 6, pp. 10.
- Niku, M 2006, 'Vastustuskykyisiä jo syntyjään', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 13, pp. 36.
- Niku, M 2006, 'Negatiiviset tulokset kunniaan', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 5, pp. 8.
- Niku, M 2006, 'Bakteerin takkia räätälöimässä', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 13, pp. 11.
- Niku, M 2006, 'Perimä paketissa', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 14, pp. 5.
- Niku, M 2006, 'Lypsävän maksa paukkuu', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 8, pp. 9.
- Niku, M 2006, 'Geneetikon parhaat ystävät', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 8, pp. 37.
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- Niku, M 2006, 'Paljastuksia ihmiskunnan historiasta', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 14, pp. 24.
- Niku, M 2006, 'Kantasoluista ymmärrystä syöpään', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 54, no. 12, pp. 46.
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2007

- Björkroth, J 2007, 'Eläinlääketieteellistä tutkimusta ja keittokirjoja', **Eviran Kaari**, vol 6, no. 3, pp. 31.
- Lunden, J 2007, 'Laitosten hygieniavalvontaan kannattaa satsata', **Eviran Kaari**, vol 6, no. 2, pp. 19.
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- Niku, M 2007, 'Upouusi sairaala eläinpotilaille', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 55, no. 1, pp. 38.
- Niku, M 2007, 'Linnen jalo leipä', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 55, no. 11, pp. 5.

2008

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INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF PUBLICATIONS DATA 2005-2010

CoE-MiFoSaPLUS/Palva

Niku, M **2008**, 'Tunnetko tuoksun?', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 56, no. 10, pp. 44-45.

Niku, M **2008**, 'Geneetikot kansantautien kimppuun', **Helsingin Sanomat**, pp. D1.

Salin, N, Kinnunen, P **2008**, 'Kissojen virusinfektiot Suomessa', **Kissa : Suomen kissaliitto SRK r.y:n jäsenjulkaisu.**, vol 47, no. 1, pp. 17-20.

2009

Hänninen, M, Hakkinen, M **2009**, 'Nautojen kampylobakteerit ovat karjatilan työterveysriski', **Maaseudun tiede**, vol 66, no. 4, pp. 10.

Knuuttila, A, Vapalahti, OP **2009**, 'Aleutian tautia suomalaisissa nääteläimissä?', **Metsästäjä.**, vol 58, no. 1, pp. 66.

Lindström, M **2009**, 'Elintarvike- ja ympäristöhygienian laitos täytti 50 vuotta', **Kehittyvä elintarvike**, vol 20, no. 6, pp. 16-17.

Niku, M **2009**, 'Darwin gerberassa', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 57, no. 5, pp. 7.

Niku, M **2009**, 'Jotta jäätimantit olisivat ikuisia', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 57, no. 11, pp. 8.

Niku, M **2009**, 'Kissankin perimä aukeaa', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 57, no. 4, pp. 7.

Niku, M **2009**, 'Pahan paikka aivoissa', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 57, no. 6/7, pp. 4.

Niku, M **2009**, 'Rintasyöpään apua virtuaalimaailmasta', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 57, no. 4, pp. 22-23.

2010

Ekman, A **2010**, 'Löhöily on lihastreeni', **Yliopisto : Helsingin yliopiston tiedelehti**, vol 2010, no. 10, pp. 7.

H1 Patents

2010

Jaatinen, T, Meri, S, Junnikkala, S, Laine, J, Partanen, J Jun. 30 2010, *Menetelmä solujen suojaamiseksi (Method of protecting cells)*, F1121073.

Vos de, WM, Palva, A, Palva, I, Reunanen, J, von Ossowski, I, Satokari, RM, Vesterlund, S, Kankainen, M, Salusjärvi, T, Tynkkynen, S **2010**, *Novel peptides and methods for producing them*, WO2010086512, US 2010196524.



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

CoE-MiFoSaPLUS/Palva A

1 Analysis of activities 2005-2010

- Associated person is one of Johannes Sakari Aarnikunnas , Aivars Berzins , Johanna Björkroth ,
Elias Dahlsten , Yagmur Derman , Astrid de Haan ,
Willem Meindert Vos de , Anna Ekman , Maria Fredriksson-Ahomaa ,
Manuel Gonzalez Jimenez , Minna Hannula , Annamari Heikinheimo ,
Sanna Hellström , Ulla Hynönen , Marja-Liisa
Hänninen , Ari Hörman , Antti Iivanainen , Jonna Kaarina Jalanka-Tuovinen ,
Pekka Juntunen , Per Johansson , Sami Junnikkala ,
Eva Kallio, Susanna Kangas , Ravi Kant ,
Tuija Kantala , Riikka Keto-Timonen , Paula Kinnunen ,
David Kirk , Rauni Kivistö , Carolin Adriane Kolmeder ,
Joanna Koort , Hannu Korkeala , Lotta Kaisa Krogius-Kurikka ,
Laura Laakso , Riikka Laukkanen-Ninios , Outi Lepistö , Jenni Maria Liljavirta ,
Mia Lindström , Jere Lindén , Agneta Lindholm ,
Erja Satumäjä Malinen , Janne Lunden , Tanja Tuulikki Lähteinen ,
Joana Revez , Mirjami Mattila , Leena Maunula ,
Anna Murros-Konttinen , Mari Nevas , Timo Nieminen ,
Janne Tapio Nikkilä , Mikael Niku , Lotta Nylund , Satu Olkkola ,
Pilar Ortiz Martinez , Ingemar von Ossowski , Eveliina Palonen , Airi Palva ,
Tiina Inkeri Pessa-Morikawa , Riitta Rahkila ,
Raimo Pohjanvirta , Justus Reunanen ,
Rinttilä , Ruska Rimhanen-Finne, Simo Rintakoski ,
Maria Rönqvist , Heidi Elina Rossow ,
Anne Salonen , Tiina Salomäki ,
Summa , Reetta Maria Satokari , Katja Selby ,
Vapalahti , Elina Säde , Henna Söderholm ,
Heikki Gunnar Vilén , Anna-Maija Kristiina Virtala ,
Zhen Zhang , Silja Avall-Jääskeläinen , Sonja Virtanen ,

Activity type	Count
Supervisor or co-supervisor of doctoral thesis	148
Prizes and awards	18
Editor of research journal	34
Peer review of manuscripts	144
Editor of communication journal	1
Editor of special theme number	1
Assessment of candidates for academic posts	18
Membership or other role in review committee	23
Membership or other role in research network	18
Membership or other role in national/international committee, council, board	80
Membership or other role in public Finnish or international organization	36
Membership or other role of body in private company/organisation	23
Participation in interview for written media	62
Participation in radio programme	9
Participation in TV programme	9



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Activity type	Count
Participation in interview for web based media	4



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RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

CoE-MiFoSaPLUS/Palva A

2 Listing of activities 2005-2010

Supervisor or co-supervisor of doctoral thesis

Johanna Björkroth ,

Supervision of PhD thesis of Elina Säde (Vihavainen), Johanna Björkroth, 2005 → 2011, Finland

Supervision of PhD thesis of Joanna Koort, Johanna Björkroth, 2006

Supervision of PhD thesis of Lauri Merivirta, Johanna Björkroth, 2007

Supervision of PhD thesis of Marzia Mohsina, Johanna Björkroth, 2007 → 2009, Finland

Supervision of PhD thesis of Anna Murros-Konttinen, Johanna Björkroth, 2009 → ..., Finland

Supervision of PhD thesis of Maria Sjöman, Johanna Björkroth, 2009

Supervision of PhD thesis of Riitta Rahkila, Johanna Björkroth, 2010 → ..., Finland

Willem Meindert Vos de ,

Characterization and engineering of thermostable glycoside hydrolases, Willem Meindert Vos de, 2007 → ..., Netherlands

Diversity analyses of the intestinal microbiota in health and disease, Willem Meindert Vos de, 02.2007 → ..., Finland

Diversity of the human gastro-intestinal tract: Novel perspectives from high throughput analyses, Willem Meindert Vos de, 11.06.2007, Netherlands

Exploring the functionality of intestinal bifidobacteria: A post-genomics approach, Willem Meindert Vos de, 21.09.2007, Netherlands

Functional analysis of *Lactobacillus plantarum* WCFS1: A proteomic approach, Willem Meindert Vos de, 17.10.2007, Netherlands

Functional analysis of thermostable proteins involved in carbohydrate metabolism, Willem Meindert Vos de, 01.10.2007, Netherlands

Germination of *Bacillus cereus* spores: The role of germination receptors., Willem Meindert Vos de, 03.09.2007, Netherlands

Metaproteomics of the intestinal microbiota, Willem Meindert Vos de, 09.2007 → ..., Finland

Microbial alcohol dehydrogenases: identification, characterization and engineering, Willem Meindert Vos de, 16.10.2007, Netherlands

Mucin utilisation and host interactions of the novel intestinal microbe *Akkermansia muciniphila*, Willem Meindert Vos de, 2007 → ..., Netherlands

Structural and functional analysis of eukaryal-like proteins from the hyperthermophilic archaeon *Sulfolobus solfataricus*, Willem Meindert Vos de, 10.12.2007, Netherlands

Assessment of the pectinolytic network of *Aspergillus niger* by functional genomics - insights from the transcriptome, Willem Meindert Vos de, 11.06.2008, Netherlands

Bile salt hydrolase in *Lactobacillus plantarum*: Functional analysis and delivery to the intestinal tract of the host, Willem Meindert Vos de, 18.04.2008, Netherlands

Computational genomics of hyperthermophiles, Willem Meindert Vos de, 16.04.2008, Netherlands

Electron transport chains of lactic acid bacteria, Willem Meindert Vos de, 10.10.2008, Netherlands

Fine tuning of the *Bacillus cereus* stress response; role of transcriptional regulators, Willem Meindert Vos de, 23.03.2008, Netherlands

Listeria monocytogenes growth limits and stress mechanisms, Willem Meindert Vos de, 09.12.2008, Netherlands

Modulation of folate production in lactic acid bacteria, Willem Meindert Vos de, 08.01.2008, Netherlands

Oxidative stress response in *Lactobacillus plantarum* WCFS1: A functional genomics approach, Willem Meindert Vos de, 18.04.2008, Netherlands

Transcriptome response of *Lactobacillus plantarum* to global regulator deficiency, stress and other environmental conditions, Willem Meindert Vos de, 11.01.2008, Netherlands

Unravelling the regulatory network of *Lactobacillus plantarum* WCFS1, Willem Meindert Vos de, 07.01.2008, Netherlands

Vitamin B12 synthesis in *Lactobacillus reuteri*, Willem Meindert Vos de, 15.09.2008, Netherlands

Analysis of the diversity and function of the human small intestinal microbiota., Willem Meindert Vos de, 14.04.2009, Netherlands

Biochemical and structural analysis of thermostable esterases, Willem Meindert Vos de, 28.08.2009, Netherlands



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

CoE-MiFoSaPLUS/Palva A

Characterization and engineering of thermophilic aldolases. Synthesizing nitrogen-heterocycles in biosynthetic routes., Willem Meindert Vos de, 06.03.2009, Netherlands

Comparative functional genomics of amino acid metabolism of lactic acid bacteria, Willem Meindert Vos de, 16.10.2009, Netherlands

Dehalococcoides spp in river sediments: Insight in functional diversity and dechlorination activity., Willem Meindert Vos de, 29.05.2009, Netherlands

Integrated molecular analysis of sugar metabolism of Sulfolobus solfataricus, Willem Meindert Vos de, 02.10.2010, Netherlands

Maria Fredriksson-Ahomaa ,

Co-supervisor of Riikka Laukkanen's doctoral thesis, Maria Fredriksson-Ahomaa, 2000 → 2010, Finland

Co-supervisor of Pilar Ortiz Martinez's doctoral thesis, Maria Fredriksson-Ahomaa, 2004 → 2010, Finland

Co-supervision Matthias Gerhardt's doctoral thesis, Maria Fredriksson-Ahomaa, 2005, Germany

Co-supervisor of Susanna Kangas' doctoral thesis, Maria Fredriksson-Ahomaa, 2005 → ..., Finland

Co-supervision of Carmen Lampert's doctoral thesis, Maria Fredriksson-Ahomaa, 2006, Germany

Co-supervision of Alexander Brinkmann's doctoral thesis, Maria Fredriksson-Ahomaa, 2007, Germany

Co-supervision of Britta Grötzbach's doctoral thesis, Maria Fredriksson-Ahomaa, 2007, Germany

Co-supervision of Britta Hartmann's doctoral thesis, Maria Fredriksson-Ahomaa, 2007, Germany

Co-supervision of Cornelia Meyer's doctoral thesis, Maria Fredriksson-Ahomaa, 2007, Germany

Co-supervision of Elisabeth Stüber's doctoral thesis, Maria Fredriksson-Ahomaa, 2007, Germany

Co-supervision of Christine Knödl's doctoral thesis, Maria Fredriksson-Ahomaa, 2008, Germany

Co-supervision of Silke Wachek's doctoral thesis, Maria Fredriksson-Ahomaa, 2008, Germany

Co-supervision of Tanja Effenberger's doctoral thesis, Maria Fredriksson-Ahomaa, 2008, Germany

Co-supervision of Anna Murros-Kontinen's doctoral thesis, Maria Fredriksson-Ahomaa, 2009 → ..., Finland

Co-supervision of Sarah Prohaska's doctoral thesis, Maria Fredriksson-Ahomaa, 2009, Germany

Co-supervision of Sascha Stiny's doctoral thesis, Maria Fredriksson-Ahomaa, 2009, Germany

Co-supervision of Susanne Karpf's doctoral thesis, Maria Fredriksson-Ahomaa, 2009, Germany

Co-supervision of Carolin Bumann's doctoral thesis, Maria Fredriksson-Ahomaa, 2010, Germany

Co-supervision of Carolin Werres' doctoral thesis, Maria Fredriksson-Ahomaa, 2010, Germany

Co-supervision of Claudia Thum's doctoral thesis, Maria Fredriksson-Ahomaa, 2010, Germany

Co-supervision of Leonie Paasche's doctoral thesis, Maria Fredriksson-Ahomaa, 2010, Germany

Co-supervision of Marlene Eggert's doctoral thesis, Maria Fredriksson-Ahomaa, 2010 → ..., Germany

Co-supervision of Sabine Hank's doctoral thesis, Maria Fredriksson-Ahomaa, 2010 → ..., Germany

Co-supervisor of Sonja Virtanen's doctoral thesis, Maria Fredriksson-Ahomaa, 2010 → ..., Finland

Co-supervisor of Taina Niskanen's doctoral thesis, Maria Fredriksson-Ahomaa, 2010, Finland

Marja-Liisa Hänninen ,

Supervisor of Ruska Rimhanen-Finne's PhD thesis, Marja-Liisa Hänninen, 1998 → 2006, Finland

Supervisor of Päivikki Perko-Mäkelä's PhD thesis, Marja-Liisa Hänninen, 1999 → ..., Finland

Supervisor of Tarja Pitkänen's PhD thesis, Marja-Liisa Hänninen, 2001 → 2010, Finland

Supervisor of Kristi Praakle-Amin's PhD thesis, Marja-Liisa Hänninen, 2002 → ..., Finland

Supervisor of Rauni Kivistö's PhD thesis, Marja-Liisa Hänninen, 2002 → 2007, Finland

Supervisor of Liina-Lotta Nousiainen's PhD thesis, Marja-Liisa Hänninen, 2003 → ..., Finland

Supervisor of Mati Roasto's PhD thesis, Marja-Liisa Hänninen, 2004 → 2008, Estonia

Supervisor of Ari Hörman's PhD thesis, Marja-Liisa Hänninen, 2005, Finland

Supervisor of Varpu Hirvelä-Koski's PhD thesis, Marja-Liisa Hänninen, 2005, Finland



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE UNIVERSITY OF HELSINKI

RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

CoE-MiFoSaPLUS/Palva A

Supervisor of Astrid de Haan's PhD thesis, Marja-Liisa Hänninen, 2008 → ..., Finland
Supervisor of Outi Lepistö's PhD thesis, Marja-Liisa Hänninen, 2008, Finland
Supervisor of Pekka Juntunen's PhD thesis, Marja-Liisa Hänninen, 2008 → ..., Finland
Supervisor of Satu Olkkola's PhD thesis, Marja-Liisa Hänninen, 2008 → ..., Finland
Supervisor of Manuel Gonzalez's PhD thesis, Marja-Liisa Hänninen, 2009 → ..., Finland
Supervisor of Kadrin Meremäe's PhD thesis, Marja-Liisa Hänninen, 2010, Estonia
Supervisor of Marjaana Hakkinen's PhD thesis, Marja-Liisa Hänninen, 2010, Finland
Supervisor of Minna Hannula's PhD thesis, Marja-Liisa Hänninen, 2010, Finland
Supervisor of Pradeep Kondadi's PhD thesis, Marja-Liisa Hänninen, 2010 → ..., Finland

Ari Hörman ,

Supervisor of Mati Roasto's PhD thesis, Ari Hörman, 2004 → 2008, Estonia

Antti Iivanainen ,

Supervision of Mikael Niku's PhD thesis, Antti Iivanainen, 1999 → 2007, Finland
Supervision of Matti Kaikkonen's PhD thesis, Antti Iivanainen, 2003 → 2006, Finland
Supervision of Anna Ekman's PhD thesis, Antti Iivanainen, 2005 → ..., Finland
Supervision of Tiina Salomäki's PhD thesis, Antti Iivanainen, 2007 → ..., Finland
Supervision of Jenni Liljavirta's PhD thesis, Antti Iivanainen, 2010 → ..., Finland

Per Johansson ,

Supervision of Riitta Rahkila's PhD thesis, Per Johansson, 2010 → ..., Finland

Rauni Kivistö ,

Supervisor of Astrid de Haan's doctoral thesis, Rauni Kivistö, 2008 → ..., Finland

Hannu Korkeala ,

Supervisor of Hanna Miettinen's doctoral thesis, Hannu Korkeala, 1996 → 2006, Finland
Supervisor of Maria Sjöman's doctoral thesis, Hannu Korkeala, 1997 → 2010, Finland
Supervisor of Mari Nevas' doctoral thesis, Hannu Korkeala, 2000 → 2006, Finland
Supervisor of Riikka Laukkanen's doctoral thesis, Hannu Korkeala, 2000 → 2010, Finland
Supervisor of Riikka Keto-Timonen's doctoral thesis, Hannu Korkeala, 2001 → 2008, Finland
Supervisor of Sanna Hellström's doctoral thesis, Hannu Korkeala, 2001 → ..., Finland
Supervisor of Kristi Praakle-Amin's doctoral thesis, Hannu Korkeala, 2002 → ..., Finland
Supervisor of Pilar Ortiz Martinez's doctoral thesis, Hannu Korkeala, 2004 → 2010, Finland
Supervisor of Henna Söderholm's doctoral thesis, Hannu Korkeala, 2005 → ..., Finland
Supervisor of Riina Tolvanen's doctoral thesis, Hannu Korkeala, 2005 → ..., Finland
Supervisor of Susanna Kangas' doctoral thesis, Hannu Korkeala, 2005 → ..., Finland
Supervisor of Elias Dahlsten's doctoral thesis, Hannu Korkeala, 2006 → ..., Finland
Supervisor of Eveliina Palonen's doctoral thesis, Hannu Korkeala, 2007 → ..., Finland
Supervisor of Katja Selby's doctoral thesis, Hannu Korkeala, 2007 → ..., Finland
Supervisor of Lauri Merivirta's doctoral thesis, Hannu Korkeala, 2007, Finland
Supervisor of Mirjami Mattila's doctoral thesis, Hannu Korkeala, 2007 → ..., Finland
Supervisor of Annamari Heikinheimo's doctoral thesis, Hannu Korkeala, 2008, Finland
Supervisor of Yagmur Derman's doctoral thesis, Hannu Korkeala, 2008 → ..., Finland
Supervision of Anna Murros-Konttinen's doctoral thesis, Hannu Korkeala, 2009 → ..., Finland



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Supervisor of Aivars Bērziņš' doctoral thesis, Hannu Korkeala, 2010, Finland
Supervisor of David Kirk's doctoral thesis, Hannu Korkeala, 2010 → ..., Finland
Supervisor of Laura Laakso's doctoral thesis, Hannu Korkeala, 2010 → ..., Finland
Supervisor of Sonja Virtanen's doctoral thesis, Hannu Korkeala, 2010 → ..., Finland
Supervisor of Taina Niskanen's doctoral thesis, Hannu Korkeala, 2010, Finland
Supervisor of Zhen Zhang's doctoral thesis, Hannu Korkeala, 2010 → ..., Finland

Miia Lindström ,

Supervisor of Henna Söderholm's doctoral thesis, Miia Lindström, 2005 → ..., Finland
Supervisor of Susanna Kangas' doctoral thesis, Miia Lindström, 2005 → ..., Finland
Supervisor of Elias Dahlsten's doctoral thesis, Miia Lindström, 2006 → ..., Finland
Supervisor of Eveliina Palonen's doctoral thesis, Miia Lindström, 2007 → ..., Finland
Supervisor of Katja Selby's doctoral thesis, Miia Lindström, 2007 → ..., Finland
Supervisor of Mirjami Mattila's doctoral thesis, Miia Lindström, 2007 → ..., Finland
Supervisor of David Kirk's doctoral thesis, Miia Lindström, 2010 → ..., Finland
Supervisor of Marjo Ruusunen's doctoral thesis, Miia Lindström, 2010 → ..., Finland
Supervisor of Zhen Zhang's doctoral thesis, Miia Lindström, 2010 → ..., Finland

Janne Lunden ,

Supervisor of Riina Tolvanen's doctoral thesis, Janne Lunden, 2005 → ..., Finland

Leena Maunula ,

Co-supervisor of Pia Vennerström's doctoral thesis, Leena Maunula, 2007 → ..., Finland
Supervisor of Tuija Kantala's doctoral thesis, Leena Maunula, 2007 → ..., Finland
supervisor of Maija Summa's doctoral thesis, Leena Maunula, 2008 → ...
Supervisor of Maria Rönqvist's doctoral thesis, Leena Maunula, 2010 → ..., Finland

Airi Palva ,

Supervision of Ulla Hynönen's PhD thesis, Airi Palva, 1994 → 2009, Finland
Supervision of Silja Ävall-Jääskeläinen's PhD thesis, Airi Palva, 1999 → 2005, Finland
Co-supervision of Paula Kinnunen's PhD thesis, Airi Palva, 2001 → ..., Finland
Supervision of Tanja Lähteinen's PhD thesis, Airi Palva, 2001 → ..., Finland
Supervision of Agneta Lindholm's PhD thesis, Airi Palva, 2004 → 2010, Finland
Supervision of Lotta Krogus-Kurikka's PhD thesis, Airi Palva, 2004 → ..., Finland
Supervision of Teemu Rinttilä's PhD thesis, Airi Palva, 2005 → ..., Finland
Co-supervision of Marja Fossi's PhD thesis, Airi Palva, 2006
Supervision of Johannes Aarnikunnas' PhD thesis, Airi Palva, 2006, Finland
Co-supervision of Jonna Jalanka-Tuovinen's PhD thesis, Airi Palva, 2007 → ..., Finland
Supervision of Miia Jakava-Viljanen's PhD thesis, Airi Palva, 2007, Finland
Co-supervision of Nanna Lindqvist's PhD thesis, Airi Palva, 2008, Finland
Supervision of Anna Kassinen's PhD thesis, Airi Palva, 2009, Finland

Raimo Pohjanvirta ,

Supervision of PhD thesis (Merja Korkalainen, University of Helsinki), Raimo Pohjanvirta, 1998 → 2005, Finland
Supervision of PhD thesis (Hanna Miettinen, University of Kuopio), Raimo Pohjanvirta, 2000 → 2006, Finland
Supervision of PhD thesis (Jere Lindén, University of Helsinki), Raimo Pohjanvirta, 2002 → ..., Finland



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Supervision of doctoral thesis (Sanna Lensu, University of Kuopio), Raimo Pohjanvirta, 01.01.2009 → 31.12.2011, Finland

Mirko Rossi ,

Supervisor of Pradeep Kondadi's doctoral thesis, Mirko Rossi, 2010 → ..., Finland

Anne Salonen ,

PhD thesis work supervision, Anne Salonen, 09.2007 → ..., Finland

PhD thesis work supervision, Anne Salonen, 01.02.2007 → ..., Finland

Reetta Maria Satokari ,

Supervision of Doctoral thesis, Reetta Maria Satokari, 2007 → 2013, Finland

Olli Pekka Vapalahti ,

Supervision of doctoral thesis, Olli Pekka Vapalahti, 01.12.2008 → 31.12.2008, Finland

Dengue virus infection - Diagnostics and molecular epidemiology, Olli Pekka Vapalahti, 29.11.2010

Prizes and awards

Johanna Björkroth ,

Knight, First Class, of the Order of the White Rose of Finland, Johanna Björkroth, 2008, Finland

Willem Meindert Vos de ,

Winner of the 2008 Spinoza Award, Willem Meindert Vos de, 2008, Netherlands

Academy Professor Finland, Willem Meindert Vos de, 2010 → ..., Finland

ERC Advanced Research Grant, Willem Meindert Vos de, 2010 → ...

Most Entrepreneurial Award, Willem Meindert Vos de, 2010 → ..., Netherlands

Marja-Liisa Hänninen ,

Honourable mention of the good poster, Annual Finnish Veterinary Meeting 2007, Marja-Liisa Hänninen, 31.10.2007

Knight, First Class, of the Order of the White Rose of Finland, Marja-Liisa Hänninen, 06.12.2007

Silver Medal of Walter Ehrström Foundation, Marja-Liisa Hänninen, 2008, Finland

Carolin Adriane Kolmeder ,

Poster prize, Carolin Adriane Kolmeder, 2009 → ...

Hannu Korkeala ,

Honorary member of the Society of the Finnish Veterinary Food Hygienists, Hannu Korkeala, 01.01.2000 → ..., Finland

The Veterinarian of the Year 2006, Hannu Korkeala, 2006

Foreign member of the Royal Swedish Academy of Agriculture and Forestry, Hannu Korkeala, 13.12.2007 → ..., Sweden

Honorary member of the Finnish Society of Food Science and Technology, Hannu Korkeala, 06.10.2007 → ..., Finland

Topi Salmi Prize, Hannu Korkeala, 31.10.2007

Silver Medal of Walter Ehrström Foundation, Hannu Korkeala, 2009, Finland

Foreign member of the German National Academy of Sciences Leopoldina, Hannu Korkeala, 2010 → ..., Germany

Airi Palva ,

Science Award of Helsinki City, Airi Palva, 2008, Finland

Knight, First Class, of the Order of the White Rose of Finland, Airi Palva, 2010, Finland

Editor of research journal

Johanna Björkroth ,

International Journal of Food Microbiology, editorial board, Johanna Björkroth, 1999 → ..., Netherlands

Applied and Environmental Microbiology, editorial board, Johanna Björkroth, 2002 → ..., United States



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Willem Meindert Vos de ,

Environmental Microbiology, Willem Meindert Vos de, 01.01.2007 → 31.12.2007, United Kingdom
Microbial Biotechnology, Willem Meindert Vos de, 01.01.2007 → 31.12.2007, United Kingdom
Annual Reviews of Food Science & Technology, Willem Meindert Vos de, 01.01.2008 → 31.12.2008, United Kingdom
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Current Opinion of Biotechnology, Willem Meindert Vos de, 01.01.2008 → 31.12.2008, United Kingdom
Environmental Microbiology, Willem Meindert Vos de, 01.01.2008 → 31.12.2008, United Kingdom
Gut, Willem Meindert Vos de, 01.06.2008 → 31.12.2008
Journal of Bacteriology, Willem Meindert Vos de, 01.01.2008 → 31.12.2008
Microbial Biotechnology, Willem Meindert Vos de, 01.01.2008 → 31.12.2008, United Kingdom
Nature Biotechnology, Willem Meindert Vos de, 01.01.2008 → 31.12.2008
Proc Natl Acad Science, Willem Meindert Vos de, 01.01.2008 → 31.12.2008
Science, Willem Meindert Vos de, 01.01.2008 → 31.12.2008
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Maria Fredriksson-Ahomaa ,

Editorial Board Member of Foodborne Pathogens and Disease, Maria Fredriksson-Ahomaa, 01.01.2004 → ..., United States

Hannu Korkeala ,

Editorial Board Member of International Journal of Food Microbiology, Hannu Korkeala, 1990 → 2007, Netherlands
Editorial Board Member of Journal of Food Protection, Hannu Korkeala, 2001 → 2012, United States
Editorial Board Member of Journal of Veterinary Medicine B, Hannu Korkeala, 2003 → 2006, Germany

Miia Lindström ,

Editorial Board Member of Foodborne Pathogens and Disease, Miia Lindström, 01.01.2004 → ..., United States

Janne Lunden ,

Suomen Eläinlääkärilehti, toimitusneuvosto, Janne Lunden, 01.01.2003 → 31.12.2006, Finland

Leena Maunula ,

Editorial Board Member of Food and Environmental Virology, Leena Maunula, 01.01.2009 → ..., United States

Olli Pekka Vapalahti ,

Journal of Medical Virology, Olli Pekka Vapalahti, 01.01.2005 → 31.12.2005
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Peer review of manuscripts

Astrid de Haan ,



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Review of a manuscript describing a cheaper and faster means of MLST analysis on *Campylobacter* isolates, Astrid de Haan, 07.12.2010

Willem Meindert Vos de ,

Applied Environmental Microbiology, Willem Meindert Vos de, 01.01.2007 → 31.12.2007

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Gut, Willem Meindert Vos de, 2010 → ...

Microbial Biotechnology, Willem Meindert Vos de, 2010 → ...

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Maria Fredriksson-Ahomaa ,

Peer review of manuscripts for Archiv für Lebensmittelhygiene, Maria Fredriksson-Ahomaa, 2001 → ...

Peer review of manuscripts for Food Microbiology, Maria Fredriksson-Ahomaa, 2001 → ...

Peer review of manuscripts for European Journal of Epidemiology, Maria Fredriksson-Ahomaa, 2002 → ...

Peer review of manuscripts for Italian Journal of Food Science, Maria Fredriksson-Ahomaa, 2002 → ...

Peer review of manuscripts for APMIS, Maria Fredriksson-Ahomaa, 2004 → ...

Peer review of manuscripts for Letters of Applied Microbiology, Maria Fredriksson-Ahomaa, 2004 → ...

Peer review of manuscripts for Journal of Applied Microbiology, Maria Fredriksson-Ahomaa, 2005 → ...

Peer review of manuscripts for FEMS Microbiology Letters, Maria Fredriksson-Ahomaa, 2006 → ...

Peer review of manuscripts for Journal of Veterinary Medicine, Maria Fredriksson-Ahomaa, 2006 → ...



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Peer review of manuscripts for Epidemiology and Infection, Maria Fredriksson-Ahomaa, 2007 → ...
Peer review of manuscripts for Infection, Maria Fredriksson-Ahomaa, 2007 → ...
Peer review of manuscripts for International Journal of Biomedical Science, Maria Fredriksson-Ahomaa, 2007 → ...
Peer review of manuscripts for International Journal of Food Microbiology, Maria Fredriksson-Ahomaa, 2007 → ...
Peer review of manuscripts for Journal of Food Safety, Maria Fredriksson-Ahomaa, 2007 → ...
Peer review of manuscripts for Veterinary Microbiology, Maria Fredriksson-Ahomaa, 2007 → 2010
Peer review of manuscripts for Zoonoses and Public Health, Maria Fredriksson-Ahomaa, 2007 → ..., Germany
Peer review of manuscripts for BMC Microbiology, Maria Fredriksson-Ahomaa, 2008 → ...
Peer review of manuscripts for European Journal of Clinical Microbiology and Infectious Diseases, Maria Fredriksson-Ahomaa, 2008 → ...
Peer review of manuscripts for Journal of Food Protection, Maria Fredriksson-Ahomaa, 2008 → ...
Peer review of manuscripts for International Journal of Environmental Research and Public Health, Maria Fredriksson-Ahomaa, 2009 → ...
Peer review of manuscripts for BMC Genomics, Maria Fredriksson-Ahomaa, 2010 → ...
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Peer review of manuscripts for Food Control, Maria Fredriksson-Ahomaa, 2010 → ...

Antti Iivanainen ,

Acta Veterinaria Scandinavica, Antti Iivanainen, 2008, United Kingdom
Developmental and Comparative Immunology, Antti Iivanainen, 2009 → 2011
Journal of Veterinary Medicine, Antti Iivanainen, 2009
Acta Veterinaria Scandinavica, Antti Iivanainen, 2010 → 2011
Veterinary Research Communications, Antti Iivanainen, 2010

Riikka Keto-Timonen ,

International Journal of Food Microbiology, Riikka Keto-Timonen, 01.11.2010 → 31.01.2011
PLoS ONE, Riikka Keto-Timonen, 01.09.2010 → 31.12.2010

Paula Kinnunen ,

Peer reviewer in two journals "Journal of Virological Methods" and "APMIS", Paula Kinnunen, 2008 → 2010

Miia Lindström ,

Ad hoc reviewer tasks, Anaerobe, Miia Lindström, 2001 → ...
Ad hoc reviewer tasks, Biotechniques, Miia Lindström, 01.01.2002 → ..., United States
Ad hoc reviewer tasks, Food Microbiology, Miia Lindström, 2003 → ...
Ad hoc reviewer tasks, APMIS, Miia Lindström, 2004 → ...
Ad hoc reviewer tasks, Applied and Environmental Microbiology, Miia Lindström, 2004 → ...
Ad hoc reviewer tasks, Emerging Infectious Diseases, Miia Lindström, 2004 → ...
Ad hoc reviewer tasks, Journal of Clinical Microbiology, Miia Lindström, 2005 → ...
Ad hoc reviewer tasks, International Journal of Food Microbiology, Miia Lindström, 2006 → ...
Ad hoc reviewer tasks, Journal of Medical Microbiology, Miia Lindström, 2006 → ...
Ad hoc reviewer tasks, Journal of Pediatrics, Miia Lindström, 2006 → ...
Ad hoc reviewer tasks, Scandinavian Journal of Infectious Diseases, Miia Lindström, 2006 → ...
Ad hoc reviewer tasks, BMC Evolutionary Biology, Miia Lindström, 2008 → ...
Ad hoc reviewer tasks, BMC Genomics, Miia Lindström, 2009 → ...
Ad hoc reviewer tasks, Microbial Ecology, Miia Lindström, 2009 → ...



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Ad hoc reviewer tasks, PLoS ONE, Miia Lindström, 2009 → ...

Erja Satumarja Malinen ,

Gastroenterology, Erja Satumarja Malinen, 2008

Leena Maunula ,

Peer review of Journal of virological methods, Leena Maunula, 2000 → ...

Peer review of manuscripts, Leena Maunula, 2010

Peer review of manuscripts in LAM, Leena Maunula, 2010 → ...

Eveliina Palonen ,

Foodborne Pathogens and Disease, Eveliina Palonen, 2010

Airi Palva ,

Applied and Environmental Microbiology, Airi Palva, 21.06.2005

Applied and Environmental Microbiology, Airi Palva, 08.08.2005

Applied and Environmental Microbiology, Airi Palva, 03.09.2005

BMC Microbiology, Airi Palva, 04.03.2005

FEMS Microbiology Letters, Airi Palva, 14.04.2005

FEMS Microbiology Letters, Airi Palva, 12.12.2005

Molecular Microbiology, Airi Palva, 06.04.2005

Veterinary Microbiology, Airi Palva, 2005

Veterinary Microbiology, Airi Palva, 14.09.2005

Applied and Environmental Microbiology, Airi Palva, 21.05.2006, United States

Applied and Environmental Microbiology, Airi Palva, 11.2006, United States

Cellular Microbiology, Airi Palva, 21.02.2006

Cellular Microbiology, Airi Palva, 02.06.2006

FEMS Microbiology Letters, Airi Palva, 21.02.2006

Food Science and Technology International, Airi Palva, 15.05.2006

Nature Protocols, Airi Palva, 19.05.2006

Veterinary Microbiology, Airi Palva, 05.12.2006

Archives for Microbiology, Airi Palva, 2007

Journal of Bacteriology, Airi Palva, 02.04.2007

Vaccine, Airi Palva, 12.11.2007

Antonie van Leeuwenhoek, Airi Palva, 20.11.2008

Applied Biotechnology and Microbiology, Airi Palva, 02.04.2008

Applied and Environmental Microbiology, Airi Palva, 10.12.2008

Bioconjugate Chemistry, Airi Palva, 10.11.2008

Microbiology, Airi Palva, 14.11.2008

Wiley Encyclopedia of Industrial Biotechnology, Airi Palva, 2008

International Journal of Food Microbiology, Airi Palva, 03.2009

Macromolecular Bioscience, Airi Palva, 05.2009

Antonie van Leeuwenhoek, Airi Palva, 12.2010

Applied and Environmental Microbiology, Airi Palva, 09.2010

Cell Factories, Airi Palva, 11.2010



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Journal of Medical Microbiology, Airi Palva, 11.2010

Raimo Pohjanvirta ,

Peer reviewer of Acta Veterinaria Scandinavica, Raimo Pohjanvirta, 2000 → 2011

Peer review of manuscripts for Toxicology and Applied Pharmacology, Raimo Pohjanvirta, 2004 → 2010, United States

Peer reviewer for Toxicological Sciences, Raimo Pohjanvirta, 2005 → 2011

Peer reviewer for Toxicology Letters, Raimo Pohjanvirta, 2005 → 2011

Peer reviewer for Molecular Pharmacology, Raimo Pohjanvirta, 2006 → 2011

Peer reviewer for BMC Molecular Biology, Raimo Pohjanvirta, 2008 → 2011

Peer reviewer for Cell Biology and Toxicology, Raimo Pohjanvirta, 2008 → 2011

Peer reviewer for Reproductive Toxicology, Raimo Pohjanvirta, 2008 → 2011

Anne Salonen ,

Applied Microbiology and Biotechnology, Anne Salonen, 05.2010

BMC Microbiology, Anne Salonen, 09.2010

Beneficial Microbes, Anne Salonen, 08.2010

Journal of Physiology, Anne Salonen, 01.2010

Reetta Maria Satokari ,

Peer review of Manuscript, Reetta Maria Satokari, 21.12.2009, United Kingdom

Peer review of manuscript, Reetta Maria Satokari, 15.04.2009, United Kingdom

Peer review of manuscript, Reetta Maria Satokari, 25.06.2009, United Kingdom

Peer review of manuscript, Reetta Maria Satokari, 13.08.2010, Netherlands

Peer review of manuscript, Reetta Maria Satokari, 07.06.2010

Peer review of manuscripts, Reetta Maria Satokari, 17.11.2010, United Kingdom

Olli Pekka Vapalahti ,

Cochrane Reviews, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

Emerging infectious diseases, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

Epidemiology and Infection, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

Scandinavian journal of infectious diseases, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

Vaccine, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

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Scandinavian Journal of Infectious diseases, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008

Emerging Infectious diseases, Olli Pekka Vapalahti, 01.01.2009 → 31.12.2009

Anna-Maija Kristiina Virtala ,

Acta Veterinaria Scandinavica, Anna-Maija Kristiina Virtala, 24.09.2010

Acta Veterinaria Scandinavica, Anna-Maija Kristiina Virtala, 25.10.2010

Animal: An International Journal of Animal Bioscience, Anna-Maija Kristiina Virtala, 03.01.2010

Editor of communication journal

Riikka Laukkanen-Ninios ,

Finnish Veterinary Journal, member of editorial board, Riikka Laukkanen-Ninios, 2009 → 2010, Finland



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Editor of special theme number

Hannu Korkeala ,

Special editor of the Duodecim theme number, Hannu Korkeala, 2009, Finland

Assessment of candidates for academic posts

Johanna Björkroth ,

Expert on MTT Kaisa Haukka's docent application, Johanna Björkroth, 2006, Finland

Evaluation of excellence of a nominee for Canada Research Chair, Johanna Björkroth, 2010, Canada

Maria Fredriksson-Ahomaa ,

Member of the Search Committee for the evaluation of candidates for the post of university lecturer, Maria Fredriksson-Ahomaa, 2010 → 2011, Finland

Marja-Liisa Hänninen ,

Member of the Search Committee for the evaluation of candidates for the post of university lecturer, Marja-Liisa Hänninen, 2010, Finland

Antti Iivanainen ,

Assessment of candidates for research assistant positions (tutkijatohtori), UH, Antti Iivanainen, 06.2007 → 07.2007, Finland

Assistant/associate professor in Anatomy, UC, Denmark, Antti Iivanainen, 2010, Denmark

Hannu Korkeala ,

Assessment of candidates for assistant professorship, Hannu Korkeala, 25.10.2006 → 30.11.2006, Sweden

Assessment of candidates for the post of professor in molecular food microbiology, Hannu Korkeala, 2007, Austria

Evaluation for promotion, Hannu Korkeala, 2008, United Kingdom

Examiner of Mika Tuomola's docent application, Hannu Korkeala, 2010, Finland

Member of the Search Committee for the evaluation of candidates for the post of university lecturer, Hannu Korkeala, 2010, Finland

Member of the Search Committee for the evaluation of candidates for the post of university lecturer, Hannu Korkeala, 2010 → 2011, Finland

Airi Palva ,

Dosentti, Turun yliopisto, Airi Palva, 2008, Finland

Professor, SLU, Airi Palva, 2009, Sweden

Raimo Pohjanvirta ,

Evaluation of the scholarly and professional accomplishments, Raimo Pohjanvirta, 2010 → 2011, Canada

Member of the Search Committee for the evaluation of candidates for the post of professor, Raimo Pohjanvirta, 2010, Finland

Olli Pekka Vapalahti ,

Dosentti, Olli Pekka Vapalahti, 2007

Dosentti, Olli Pekka Vapalahti, 25.02.2008

Membership or other role in review committee

Hannu Korkeala ,

Evaluation of the funding applications of Collaborative Research Programmes on Infectious Zoonotic Diseases of the German Federal Ministry of Education and Research BMBF, Hannu Korkeala, 2007, Germany

Member of the expert group in evaluating of quality and impact of Food Science and Safety of Swedish University of Agricultural Sciences, Hannu Korkeala, 2009, Sweden

Member of the expert group in evaluating of the Vetsuisse Faculty, University of Zurich, Hannu Korkeala, 2009, Switzerland

Member of the expert group in evaluating of activities of the Finnish Food Safety Authority Evira, Hannu Korkeala, 2010 → 2011, Finland



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Miia Lindström ,

External evaluator for Norwegian Research Council, Miia Lindström, 2009, Norway

Member of EAEVE evaluation board; evaluation of veterinary education in University of Ljubljana, Miia Lindström, 2009, Slovenia

Member of EAEVE evaluation board; evaluation of veterinary education in University of Padua, Miia Lindström, 2010, Italy

Airi Palva ,

Evaluation for research proposals for Estonian Science Foundation, Airi Palva, 2005, Estonia

Evaluation of research proposals for the Innovation Orientated Research Programme (IOP) on Genomics, Airi Palva, 2005, Netherlands

Evaluation of Research proposals for Medical Research Council, Airi Palva, 2006, United Kingdom

Evaluation for research proposals for United States Air Force Office of Scientific Research, Airi Palva, 2007, United States

Lithuanian State Science and Studies Foundation, Airi Palva, 18.06.2007, Lithuania

Evaluation of research proposals for Christian Doppler Forschungsgesellschaft, Airi Palva, 2008, Austria

Evaluation for research proposals for United States Air Force Office of Scientific Research, Airi Palva, 2009 → 2010, United States

Evaluation of research proposals for IWR Institute for the Promotion of Innovation by Science and Technology, Airi Palva, 2009 → 2010, Belgium

Evaluation of a CD-laboratory, Christian Doppler Forschungsgesellschaft, Airi Palva, 2010, Austria

Evaluation of research proposals for Agency for Science, Technology and Research, Airi Palva, 2010, Singapore

Evira (evaluation), Airi Palva, 2010, Finland

Standing Expert of FORMAS (The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning, Airi Palva, 2010, Sweden

Anna-Maija Kristiina Virtala ,

Steering group membership, Anna-Maija Kristiina Virtala, 01.01.2009 → 31.10.2012, Finland

Assessment for Post Doc researcher for Helsinki University, Anna-Maija Kristiina Virtala, 2010, Finland

Assessment for Post Doc researcher for Helsinki University, Anna-Maija Kristiina Virtala, 2010 → ..., Finland

Member of the evaluation committee for a PhD candidate, Anna-Maija Kristiina Virtala, 2010, Sweden

Membership or other role in research network

Johanna Björkroth ,

The Centre of Excellence in Microbial Food Safety Research MiFoSa, Johanna Björkroth, 01.01.2008 → 31.12.2013, Finland

Willem Meindert Vos de ,

Scientific Advisory Board of the NorFood Networks of Excellence on functional food, Willem Meindert Vos de, 2008

Marja-Liisa Hänninen ,

CampyFood - A Molecular Safety Approach for Campylobacter, Marja-Liisa Hänninen, 01.05.2004 → 30.06.2007

BIOTRACER Improved biotraceability of unintended micro-organisms and their substances in food and feed chain, Marja-Liisa Hänninen, 01.01.2007 → 31.12.2010

ELVIRA Research Programme on Nutrition, Food and Health, Marja-Liisa Hänninen, 01.01.2007 → 31.12.2010

The Centre of Excellence in Microbial Food Safety Research MiFoSa, Marja-Liisa Hänninen, 01.01.2008 → 31.12.2013, Finland

Hannu Korkeala ,

The Centre of Excellence in Microbial Food Safety Research MiFoSa, Hannu Korkeala, 01.01.2008 → 31.12.2013, Finland

Miia Lindström ,

CLOSTNET - Marie Curie research training network, Miia Lindström, 01.10.2009 → ...

Leena Maunula ,

EuroRotaNet, Leena Maunula, 2007 → ..., United Kingdom

NORONET network, Leena Maunula, 2010, Netherlands



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CoE-MiFoSaPLUS/Palva A

Airi Palva ,

Scientific's Fellow's Committee of the Marie Curie EST-program "Novel applications of lactic acid bacteria to improve food safety and health", INRA Research Centre, Airi Palva, 2006 → ..., France

Leader of the Centre of Excellence in Microbial Food Safety Research of the Academy of Finland, Airi Palva, 01.01.2008 → 31.12.2013, Finland

Olli Pekka Vapalahti ,

Baltic-Nordic group on Tick-borne encephalitis working group, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

Hirvikärpäsoikeus, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2008

European Network on Imported Diseases, Olli Pekka Vapalahti, 01.01.2009 → 31.12.2009

International Scientific Working Group on Tick-borne Encephalitis (ISW-TBE), Olli Pekka Vapalahti, 01.01.2009 → 31.12.2009

Nordic Network on Viral Zoonoses, Olli Pekka Vapalahti, 01.01.2009 → 31.12.2009

Haartman-seminarit, Olli Pekka Vapalahti, 2010 → ...

Membership or other role in national/international committee, council, board

Johanna Björkroth ,

NMKL Method No. 140, 2nd Ed. Lactic acid bacteria. Determination in food in association with food spoilage, Johanna Björkroth, 2003 → 2007, Norway

Collegium of University of Helsinki, Johanna Björkroth, 2004 → 2007, Finland

Committee for Research-Orientated Post Graduate Education, Faculty of Veterinary Medicine, Johanna Björkroth, 2004 → 2007, Finland

Faculty of Veterinary Medicine PhD programme, Johanna Björkroth, 2004 → 2007, Finland

Faculty of Veterinary Medicine, Council, Johanna Björkroth, 2004 → 2007, Finland

Viiikki Graduate School in Biosciences board, Johanna Björkroth, 2004 → 2010, Finland

Natural Sciences and Engineering Research Council of Canada, Johanna Björkroth, 2006 → 2010, Canada

Senate of University of Helsinki, Johanna Björkroth, 2007, Finland

Helsinki Institute for Information Technology, Johanna Björkroth, 2008 → ..., Finland

Helsinki Institute of Physics, Johanna Björkroth, 01.01.2008 → ..., Finland

Scientific council of the University of Helsinki, Helsingin yliopiston tieteellinen neuvosto, Johanna Björkroth, 01.01.2008 → ..., Finland

Academy of Finland graduate school support group, Johanna Björkroth, 2009 → 2011, Finland

Millennium Technology Prize pre-selection group, Johanna Björkroth, 2009 → ...

Teknillisten Tieteiden Akatemia (Academy for Technical Sciences), Johanna Björkroth, 2010 → ..., Finland

Willem Meindert Vos de ,

Scientific Advisory Board of the NorFood Networks of Excellence on functional foods, Willem Meindert Vos de, 2009 → ...

Sanna Hellström ,

Vice Chair of the University Collegium, University of Helsinki, Sanna Hellström, 01.04.2007 → 31.12.2013, Finland

Sami Junnikkala ,

Treasurer, Sami Junnikkala, 2005 → 2009, Finland

Chair, Sami Junnikkala, 06.2009 → ..., Finland

Hannu Korkeala ,

Member of the Management Board of ABS Graduate School - Applied Bioscience: Bioengineering, Food & Nutrition, Environment, Hannu Korkeala, 1995 → ..., Finland

Member of the International Association for Food Protection, Hannu Korkeala, 1996 → ..., United States

National representative of the International Committee on Food Microbiology and Hygiene (ICFMH) of the IUMS, Hannu Korkeala, 1996 → ...



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Director of ABS Graduate School - Applied Bioscience: Bioengineering, Food & Nutrition, Environment, Hannu Korkeala, 01.09.2009 → 2014, Finland

Member of the University Collegium, University of Helsinki, Hannu Korkeala, 01.03.2010 → 31.12.2013, Finland

Leena Maunula ,

COST 929 network ENVIRONET, Leena Maunula, 2005 → ...

a member of an expert group in a norovirus project, Leena Maunula, 2005, Finland

CEN WG6 Tag4 FOOD ANALYSIS Horizontal methods, Leena Maunula, 2006 → ...

Codex guidelines control of viruses in food, Leena Maunula, 2009 → ..., Netherlands

Mari Nevas ,

Board Member of the Finnish Society of Food Science and Technology, Mari Nevas, 01.01.2008 → 31.12.2011, Finland

Satu Olkkola ,

PhD Studies Coordinator in The Faculty of Veterinary Medicine, Satu Olkkola, 01.09.2008 → 31.12.2009

Airi Palva ,

Board member of the graduate school: "Applied Bioscience - Bioengineering, Food & Nutrition, Environment", Airi Palva, 1995 → ..., Finland

Faculty of Veterinary Medicine, Faculty Council, Airi Palva, 1998 → 2013, Finland

Member of the work group for the DVM specialization in infectious diseases, Faculty of Veterinary Medicine, Airi Palva, 2000 → ..., Finland

Member of the Scientific Council, University of Helsinki, Airi Palva, 2007 → 2012, Finland

Member of the committee for the research and scientific postgraduate education, Faculty of Veterinary Medicine, Airi Palva, 2007 → 2012, Finland

Member of the management group, Faculty of Veterinary Medicine, Airi Palva, 2007 → 2009, Finland

Member of the Funding Committee, University of Helsinki, Airi Palva, 2008 → 2011, Finland

Membership of the Assessment Expert Group, University of Helsinki, Airi Palva, 2008, Finland

Board member of the Institute of Biotechnology, Airi Palva, 01.08.2010 → 31.03.2014, Finland

Chair of the steering group of clinical microbiology, Faculty of Veterinary Medicine, Airi Palva, 2010 → ..., Finland

Member of Scientific Advisory Board of Danone Finland, Airi Palva, 2010, Finland

Member of an expert panel assessing the Finnish Food Safety Authority Evira, Ministry of Agriculture and Forestry/Net Effect Oy, Airi Palva, 2010, Finland

Member of the strategic planning group, Faculty of Veterinary Medicine, Airi Palva, 2010 → 2012, Finland

Vice member of the Collegium, University of Helsinki, Airi Palva, 2010 → 2012, Finland

Raimo Pohjanvirta ,

Member of the National Expert Consortium on Evaluation of Chemical Risks appointed by the National Food Safety Authority EVIRA, Raimo Pohjanvirta, 2008 → ..., Finland

Member of the Food Additives Subcommittee of the Finland's Advisory Committee on Foodstuffs, Raimo Pohjanvirta, 2009 → 2010, Finland

Member of the Food Contaminants and Radioactive Residues Subcommittee of the Finland's Advisory Committee on Foodstuffs, Raimo Pohjanvirta, 01.06.2010 → 31.05.2013, Finland

Elina Säde ,

Board Member of the Division of Food Hygiene, Finnish Society of Food Science and Technology, Elina Säde, 01.01.2003 → ..., Finland

Olli Pekka Vapalahti ,

European Network on Imported Viral Diseases, Olli Pekka Vapalahti, 01.01.2005 → 31.12.2005

International Scientific Working Group on Tick-Borne Encephalitis (ISW-TBE), Olli Pekka Vapalahti, 01.01.2005 → 31.12.2005, Austria

International Society for hantavirus research, Olli Pekka Vapalahti, 01.01.2005 → 31.12.2005



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Nordic Network on viral Zoonoses, Olli Pekka Vapalahti, 01.01.2005 → 31.12.2005
Organizing committee, European Meeting on Viral Zoonoses, Olli Pekka Vapalahti, 01.01.2005 → 31.12.2005
Pandemiatyöryhmä, Olli Pekka Vapalahti, 2006 → ...
Baltic- Nordic group on Tick-borne encephalitis working group, Olli Pekka Vapalahti, 2007 → 2011
European Network in Imported Viral Diseases, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007
International Scientific Working Group on Tick-Borne Encephalitis (ISW-TBS), Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007, Austria
International Society for hantavirus research, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007, South Korea
Nordic Network on Viral Zoonoses, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007
Organizing committee, European Meeting on Viral Zoonoses, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007
European Network on Imported Viral Diseases, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008
International Scientific Working Group on Tick-Borne Encephalitis (ISW-TBE), Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008, Austria
International Society for hantavirus research, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008, South Korea
Nordic Network on Viral Zoonoses, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008
Organizing committee, European Meeting on Viral Zoonoses, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008
RiViGENE (Risk Virus Genes) ja Emerging Diseases in changing European environment (EDEN) fp6-project, Olli Pekka Vapalahti, 2008 → 2011
European Meeting on Viral Zoonoses, Organizing Committee, Olli Pekka Vapalahti, 01.01.2009 → 31.12.2009
International Society for Hantavirus Research, Olli Pekka Vapalahti, 01.01.2009 → 31.12.2009
Yliopistolisen eläinsairaalan johtokunta, Olli Pekka Vapalahti, 01.01.2009 → 31.12.2009
Pandemiatyöryhmä, Olli Pekka Vapalahti, 2010 → ...
Yliopistolisen eläinsairaalan johtokunta, Olli Pekka Vapalahti, 2010 → ...

Anna-Maija Kristiina Virtala ,

NOSOVE (Nordic Society for Veterinary Epidemiology), Anna-Maija Kristiina Virtala, 01.01.2005 → 31.12.2005
SVEPM (Society for Veterinary Epidemiology and Preventive medicine), Anna-Maija Kristiina Virtala, 01.01.2005 → 31.12.2005, United Kingdom
NOSOVE (Nordic Society for Veterinary Epidemiology), Anna-Maija Kristiina Virtala, 01.01.2006 → 31.12.2006
SVEPM (Society for Veterinary Epidemiology and preventive medicine), Anna-Maija Kristiina Virtala, 01.01.2006 → 31.12.2006, United Kingdom
NOSOVE (Nordic Society for Veterinary Epidemiology), Anna-Maija Kristiina Virtala, 01.01.2007 → 31.12.2007
SVEPM (Society for Veterinary Epidemiology and Preventive Medicine), Anna-Maija Kristiina Virtala, 31.03.2007 → 31.12.2007, United Kingdom
Suomen epidemiologian seura, Anna-Maija Kristiina Virtala, 01.01.2007 → 31.12.2008, Finland
NOSOVE (Nordic Society for Veterinary Epidemiology), Anna-Maija Kristiina Virtala, 01.01.2008 → 31.12.2008
Finnish Epidemiology Society, Anna-Maija Kristiina Virtala, 2009, Finland
NOSOVE (Nordic Society for Veterinary Epidemiology), Anna-Maija Kristiina Virtala, 01.01.2009 → 31.12.2009

Membership or other role in public Finnish or international organization

Johanna Björkroth ,

Uuseliintarvikelautakunta (Board of novel foods), Johanna Björkroth, 01.05.2004 → 25.05.2012, Finland
Subcommittee on the Taxonomy of Bifidobacterium, Lactobacillus and Related Organisms, Johanna Björkroth, 2005 → ...
Helsingin yliopistomuseon säätiö, Johanna Björkroth, 2008 → ...
Academic Executive Advisory Board of Elsevier publishing, Johanna Björkroth, 2010 → ...
CSC — IT Center for Science Ltd, Johanna Björkroth, 2010 → ...



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Sanna Hellström ,

Member of the Helsinki City Council, Sanna Hellström, 2001 → 2012, Finland

Member of the Helsinki City Board, Sanna Hellström, 2003 → 2008, Finland

Helsingin kaupungin sosiaalilautakunta, päivähoitojaosto, kaupunginhallituksen edustaja, Sanna Hellström, 01.01.2005 → 31.12.2008, Finland

Helsinki City Social Services Committee, representative of City Board, Sanna Hellström, 01.01.2005 → 31.12.2008, Finland

Helsingin kaupungin opetuslautakunta, ruotsinkielinen jaosto, kaupunginhallituksen varaedustaja, Sanna Hellström, 01.01.2007 → 31.12.2008, Finland

Board Member of Uusimaa Regional Council, Sanna Hellström, 01.01.2009 → 31.12.2012, Finland

Marja-Liisa Hänninen ,

Member of the Finnish Committee for Standardization of Microbiological Methods for Drinking Water, Marja-Liisa Hänninen, 1988 → ..., Finland

Member of the Research Council for Health, Academy of Finland, Marja-Liisa Hänninen, 01.01.2004 → 31.12.2009

The Faculty council, Marja-Liisa Hänninen, 2010 → 2013

Carolyn Adriane Kolmeder ,

FinnProt Secretary, Carolyn Adriane Kolmeder, 04.02.2009 → ..., Finland

Joanna Koort ,

MMM:n asettama pysyvä mikrobilääketyöryhmä, Joanna Koort, 01.01.2007 → 31.12.2009, Finland

Hannu Korkeala ,

European College of Veterinary Public Health ECVPH, Hannu Korkeala, 2002 → ...

Olli Pekka Vapalahti ,

HUSLAB-ylilääkärin sivuvirka; vastuullinen virologian osaston zoonosiyksiköstä ja elektronimikroskopiayksiköstä, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

Pandemiatyöryhmä, Hgin yliopisto, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007, Finland

Puumalavirus -diagnostiikan laaduntarkkailukierrosten järjestäminen X4, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007, Finland

Scientific advisory board jäsen seuraavissa yrityksissä HAARTBIO ja REAGENA, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007, Finland

Yliopistollisen eläinsairaalan johtokunta, Olli Pekka Vapalahti, 01.01.2007 → 31.12.2007

HUSLAB- ylilääkärin sivuvirka; vastuullinen virologian osaston zoonosiyksiköstä ja elektronimikroskopiayksiköstä, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008, Finland

Puumalavirus- diagnostiikan laaduntarkkailukierrosten järjestäminen 4 x vuodessa (LABQUALITY), Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008

SCIENTIFIC ADVISORY BOARD JÄSEN SEURAAVISSA YRITYKSISSÄ - HAARTBIO - REAGENA, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008, Finland

Yliopistollisen eläinsairaalan johtokunta, Olli Pekka Vapalahti, 01.01.2008 → 31.12.2008

Anna-Maija Kristiina Virtala ,

EELA, Anna-Maija Kristiina Virtala, 05.09.2005 → 31.12.2005, Finland

MMMELO, Anna-Maija Kristiina Virtala, 08.11.2005 → 31.12.2005, Finland

MTT Taloustutkimus, Anna-Maija Kristiina Virtala, 14.09.2005 → 31.12.2005, Finland

EELA Lausunto raportin luonnoksesta: Suu- ja sorkkataudin leviäminen Suomessa. Asiantuntija-arvio leviämisen laajuudesta kahdessa eri tapahtumaympäristössä, Anna-Maija Kristiina Virtala, 13.03.2006 → 31.12.2006, Finland

MMMELO, Lausunto päätöksen 572-1995 korvaamisesta (eläintautitarkastukset sisämarkkinoilla) ja asetuksen 655-2003 muuttamisesta (turkiseläinrehun tuontitarkastukset), Anna-Maija Kristiina Virtala, 24.08.2006 → 31.12.2006, Finland

MMMELO, Lintuinfluenssa-asiantuntijaryhmän jäsen, Anna-Maija Kristiina Virtala, 01.01.2006 → 31.12.2006, Finland

MMMELO, Suu- ja sorkkatauti asiantuntijaryhmän jäsen, Anna-Maija Kristiina Virtala, 01.01.2006 → 31.12.2006, Finland



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EVIRA, Anna-Maija Kristiina Virtala, 26.06.2007 → 31.12.2007, Finland

MMMELO, Anna-Maija Kristiina Virtala, 12.01.2007 → 31.12.2007, Finland

MMMELO - kommentteja eläintautilakiin ja lakiin helposti leviävistä eläintaudeista, Anna-Maija Kristiina Virtala, 05.06.2008 → 31.12.2008, Finland

Membership or other role of body in private company/organisation

Johanna Björkroth ,

Walter Ehrströmin säätiö (Foundation of Walter Ehrström), Johanna Björkroth, 01.01.2004 → ..., Finland

Finnish Food and Drink Industries' Federation Scientific Board, Johanna Björkroth, 2006 → ...

Licentia Ltd, Johanna Björkroth, 2010 → ..., Finland

Annamari Heikinheimo ,

Member of the Representative Council of the Finnish Veterinary Association, Annamari Heikinheimo, 01.01.2002 → 31.12.2010, Finland

Suomen Eläinlääkäriliitto r.y., sosiaalivaliokunta, Annamari Heikinheimo, 01.01.2005 → 31.12.2006, United Kingdom

Member of the Continuing Education Board of the Finnish Veterinary Association, Annamari Heikinheimo, 01.01.2008 → 31.12.2013, Finland

Sanna Hellström ,

Board Member of Stadium-foundation, Sanna Hellström, 01.01.2000 → 31.12.2005, Finland

Member of the Board of the Finnish Veterinary Association, Sanna Hellström, 01.01.2002 → 31.12.2007, Finland

Suomen Eläinlääkäriliitto r.y., työvaliokunta, Sanna Hellström, 01.01.2002 → 31.12.2007, Russia

Member of the Representative Council of the Finnish Veterinary Association, Sanna Hellström, 01.01.2005 → 31.12.2010, Finland

Suomen Eläinlääkäriliitto r.y., valtion palkkavalioikunta, Sanna Hellström, 01.01.2005 → 31.12.2007, Russia

Suomen Eläinlääkäriliitto r.y., opiskelijavalioikunta, Sanna Hellström, 10.02.2006 → 31.12.2007, Russia

Chairman of the Finnish Veterinary Association, Sanna Hellström, 01.01.2008 → 31.12.2010, Finland

Marja-Liisa Hänninen ,

Member of the Continuing Education Board of the Finnish Veterinary Association, Marja-Liisa Hänninen, 01.01.2008 → 31.12.2010, Finland

Hannu Korkeala ,

Member of the Board of Trustees of the Finnish Veterinary Foundation, Hannu Korkeala, 1995 → ..., Finland

Board Member of the Finnish Foundation of Veterinary Sciences, Hannu Korkeala, 01.01.2002 → 31.12.2010, Finland

Member of the Working Committee of the Scientific Advisory Board of the Finnish Food Research Foundation, Hannu Korkeala, 2004 → ..., Finland

Miia Lindström ,

Member of the Representative Council of the Finnish Veterinary Association, Miia Lindström, 01.01.2002 → 31.12.2013, Finland

Member of the Continuing Education Board of the Finnish Veterinary Association, Miia Lindström, 01.01.2005 → 31.12.2007, Finland

Member of the Continuing Education Board of the Finnish Veterinary Association, Miia Lindström, 01.01.2008 → 31.12.2013, Finland

Chairman of the Finnish Association for Milk Hygiene, Miia Lindström, 15.04.2010 → ..., Finland

Henna Söderholm ,

Suomen Eläinlääkäriliitto r.y., tulevaisuustyöryhmä, Henna Söderholm, 01.01.2006 → 31.12.2006, United Kingdom

Member of the Representative Council of the Finnish Veterinary Association, Henna Söderholm, 01.01.2008 → 31.12.2010, Finland

Participation in interview for written media

Annamari Heikinheimo ,

Haasteena kylmässä viihtyvät bakteerit, Annamari Heikinheimo, 2007, Finland

Antti Iivanainen ,



INTERNATIONAL EVALUATION OF RESEARCH AND DOCTORAL TRAINING AT THE
UNIVERSITY OF HELSINKI

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CoE-MiFoSaPLUS/Palva A

Lehmä ammuu geenin tarkkuudella, Antti Iivanainen, 15.07.2009, Finland

Luut viestivät menneestä ja nykypäivästä, Antti Iivanainen, 2009, Finland

Paula Kinnunen ,

Helsingin sanomat, Paula Kinnunen, 30.11.2001 → 31.12.2011, Finland

Rauni Kivistö ,

Verkon yhdistämät, Rauni Kivistö, 23.10.2007, Finland

Hannu Korkeala ,

Elintarvikehygienian professorista vuoden eläinlääkäri, Hannu Korkeala, 06.05.2006, Finland

Eläinlääkäri huolehtii ihmisistäkin, Hannu Korkeala, 09.05.2006, Finland

Eläinlääkäri työskentelee ihmisten terveyden puolesta, Hannu Korkeala, 08.05.2006, Finland

Hannu Korkealasta vuoden eläinlääkäri, Hannu Korkeala, 06.05.2006, Finland

Hannu Korkealasta vuoden eläinlääkäri, Hannu Korkeala, 06.05.2006, Finland

Hannu Korkealasta vuoden eläinlääkäri, Hannu Korkeala, 07.05.2006, Finland

Korkeala vuoden eläinlääkäri, Hannu Korkeala, 08.05.2006, Finland

Korkealasta vuoden eläinlääkäri, Hannu Korkeala, 05.05.2006, Finland

Milk Galore!, Hannu Korkeala, 2006, Finland

Riski lautasella, Hannu Korkeala, 2006, Finland

Suomen Eläinlääkäriiliitto valitsi Vuoden eläinlääkäriksi elintarvikehygienian professori Hannu Korkealan, Hannu Korkeala, 09.05.2006, Finland

Vuoden eläinlääkäri lumoutuu bakteereista, Hannu Korkeala, 05.05.2006, Finland

Vuoden eläinlääkäri on lähtöisin Mäntästä, Hannu Korkeala, 05.05.2006, Finland

Vuoden eläinlääkäri vaalii ruokaturvallisuutta, Hannu Korkeala, 08.05.2006, Finland

Haasteena kylmässä viihtyvät bakteerit, Hannu Korkeala, 2007, Finland

"Nuoret eläinlääkäritutkijat pitäisi saada kiinnostumaan perustutkimuksesta", Hannu Korkeala, 2009

Vaara lautasella, Hannu Korkeala, 29.07.2010, Finland

Leena Maunula ,

participation in open media meeting in virology days in Oulu 2007, Leena Maunula, 16.03.2007, Finland

Janne Tapio Nikkilä ,

Bioinformaattikan kansainvälisen maisteriohjelman esittely, Janne Tapio Nikkilä, 19.11.2008 → 31.12.2011, Netherlands

Mikael Niku ,

Helsingin Sanomat, Mikael Niku, 19.05.2001 → 31.12.2011, Finland

Tiede-lehti, Mikael Niku, 01.01.2001 → 31.12.2011, Finland

Helsingin Sanomat, Mikael Niku, 17.08.2002 → 31.12.2011, Finland

Helsingin Sanomat, Mikael Niku, 07.06.2003 → 31.12.2011, Finland

Yliopisto 14/2004, Mikael Niku, 01.01.2004 → 31.12.2011, Finland

Helsingin Sanomat 7.11.2006, Mikael Niku, 07.11.2006 → 31.12.2011, France

Yliopisto -lehti, 2006, 12:46, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopisto -lehti, 2006, 13, 11, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopisto -lehti, 2006, 5:8, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopisto -lehti, 2006, 5:8, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopisto -lehti, 2006, 8:9, Mikael Niku, 01.01.2006 → 31.12.2011, France



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CoE-MiFoSaPLUS/Palva A

Yliopisto -lehti, 2006,13:36, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopisto -lehti, 2006,8:37, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopisto -lehti, 2006, 12:6, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopisto, 2006, 7:9, Mikael Niku, 01.01.2006 → 31.12.2011, France

Yliopistolainen, 2006, 6:10, Mikael Niku, 01.01.2006 → 31.12.2011, France

Airi Palva ,

Yliopistolainen, Airi Palva, 02.03.2007, Finland

Lehdistövierailu Viikin huippuyksiköihin, Airi Palva, 29.05.2008, Finland

Yliopistolainen, Airi Palva, 2010, Finland

Olli Pekka Vapalahti ,

Etelä-Suomen Sanomat, Olli Pekka Vapalahti, 01.01.2004 → 31.12.2011, Finland

Suomen Lääkärilehti 12/2005, Olli Pekka Vapalahti, 01.01.2005 → 31.12.2011, Finland

Svenska dag, Viikki, Olli Pekka Vapalahti, 04.11.2005 → 31.12.2011, Finland

yleisötilaisuus, Helsinki, Olli Pekka Vapalahti, 23.03.2005 → 31.12.2011, Finland

yleisötilaisuus, Kokkola, Olli Pekka Vapalahti, 18.03.2005 → 31.12.2011, Finland

yliopiston lehdistötapaaminen, Olli Pekka Vapalahti, 14.12.2005 → 31.12.2011, Finland

Haastattelu/Etelä-Suomen Sanomat, Olli Pekka Vapalahti, 04.07.2006 → 31.12.2011, Finland

Helsingin Sanomat, Olli Pekka Vapalahti, 18.06.2007 → 31.12.2011, Finland

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Helsingin Sanomat, Olli Pekka Vapalahti, 16.07.2008 → 31.12.2011, Finland

Huvudstadsbladet, Olli Pekka Vapalahti, 21.08.2008 → 31.12.2011, Finland

Lääkäripäivien lehdistötilaisuus, Olli Pekka Vapalahti, 07.01.2008 → 31.12.2011, Finland

Hirvikärpäsen bakteerien leviämistä ihmisiin selvitetään, Olli Pekka Vapalahti, 19.09.2010

Hyttiset levittävät kuumetautiä Euroopassa, Olli Pekka Vapalahti, 21.09.2010

Kuka pelkää punkkia?, Olli Pekka Vapalahti, 2010 → ...

Punkkirokote vai ei?, Olli Pekka Vapalahti, 2010 → ...

Puutiaisaivokuumeetta useammalla paikkakunnalla kuin koskaan, Olli Pekka Vapalahti, 11.11.2010

Silja Ävall-Jääskeläinen ,

Interview in the Yliopisto magazine, Silja Ävall-Jääskeläinen, 27.11.2006, Finland

Participation in radio programme

Hannu Korkeala ,

Ohjelmasarja Myrkkyradiaattori, 2. osa: Sian siittiöitä, rakennuspölyä ja mikrobimyrkkyjä, Hannu Korkeala, 15.06.2005, Finland

Ohjelmasarja Myrkkyradiaattori, 2. osa: Sian siittiöitä, rakennuspölyä ja mikrobimyrkkyjä; lyhennetty uusintalähetyt, Hannu Korkeala, 16.06.2005, Finland

Radio-ohjelma Sentinvenyttäjä, Hannu Korkeala, 14.06.2005, Finland

Radion keittiö- ja ruokaohjelma Huoltoasemalla, Hannu Korkeala, 02.07.2005, Finland

Tampereen Radion uutiset, Hannu Korkeala, 19.01.2007, Finland

Onko kanojen ja sikojen rehun saastuminen salmonellalla yksittäinen tapaus vai johdonmukainen seuraus elintarvikeketjun toimintatavoista? Vaivaako ruoantuotantoa finanssimaailmasta tuttu ilmiö - moraalikato?, Hannu Korkeala, 25.03.2009, Finland

Miia Lindström ,

Ohjelmasarja Myrkkyradiaattori, 2. osa: Sian siittiöitä, rakennuspölyä ja mikrobimyrkkyjä, Miia Lindström, 15.06.2005, Finland



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RC-SPECIFIC TUHAT COMPILATIONS OF OTHER SCIENTIFIC ACTIVITIES 2005-2010

CoE-MiFoSaPLUS/Palva A

Ohjelmasarja Myrkkyradiaattori, 2. osa: Sian siittiötä, rakennuspölyä ja mikrobimyrkkyjä; lyhennetty uusintalähetyk, Miia Lindström, 16.06.2005, Finland

Heikki Gunnar Vilen ,

Radio-ohjelma Radiaattori (Yle Ykkönen), Heikki Gunnar Vilen, 16.11.2005 → 31.12.2011, Finland

Participation in TV programme

Johanna Björkroth ,

Aamu-TV (Morning TV) direct broadcast, Johanna Björkroth, 2010

Hannu Korkeala ,

Professori Hannu Korkeala on Vuoden eläinlääkäri, Hannu Korkeala, 05.05.2006, Finland

Leena Maunula ,

interview in a local TV programm, Leena Maunula, 2007, Finland

Airi Palva ,

Product company Arte Zoom: FiDiPro, Airi Palva, 10.01.2007, France

YLE 2, TV-interview, Airi Palva, 02.02.2007, Finland

YLE 2; TV-interview, Airi Palva, 29.09.2007, Finland

YLE 2; TV-interview, Airi Palva, 27.03.2008, Finland

Olli Pekka Vapalahti ,

studiohaastattelu/Prisma Studio (TV-ohjelma), Olli Pekka Vapalahti, 04.07.2006 → 31.12.2011, Finland

Animal to human: hidden diseases, Olli Pekka Vapalahti, 22.04.2010

Participation in interview for web based media

Annamari Heikinheimo ,

Joka viides kantaa tietämättään ruokamyrkytysbakteeria, Annamari Heikinheimo, 04.04.2008, Finland

Hannu Korkeala ,

Botulismi pysynyt hyvin aisoissa Suomessa, Hannu Korkeala, 23.06.2008, Finland

Uuden lihaa pilaavan bakteerin odotetaan saapuvan pian Suomeen, Hannu Korkeala, 09.07.2010, Finland

Miia Lindström ,

Botulismi pysynyt hyvin aisoissa Suomessa, Miia Lindström, 23.06.2008, Finland



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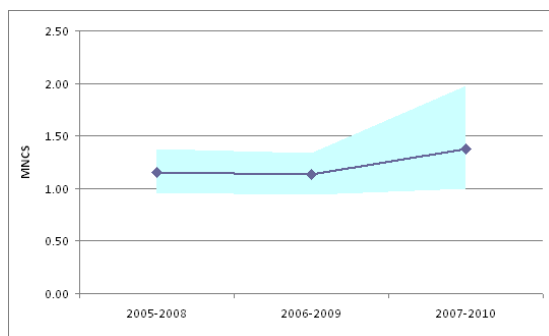
Web of Science(WoS)-based bibliometrics of the RC's publications data 1.1.2005-31.12.2010
by CWTS, Leiden University, the Netherlands

Research Group: Palva A

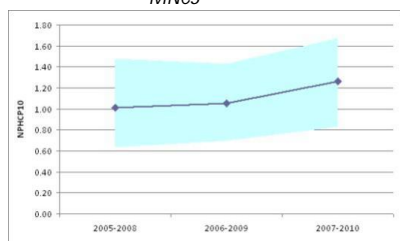
Basic statistics

Number of publications (P)	318
Number of citations (TCS)	2,070
Number of citations per publication (MCS)	6.57
Percentage of uncited publications	25%
Field-normalized number of citations per publication (MNCS)	1.27
Field-normalized average journal impact (MNJS)	1.13
Field-normalized proportion highly cited publications (top 10%)	1.11
Internal coverage	.83

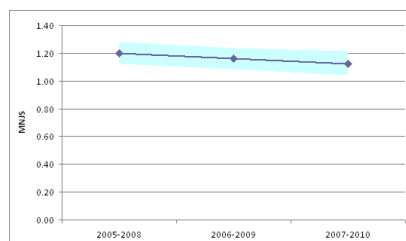
Trend analyses



MNCS

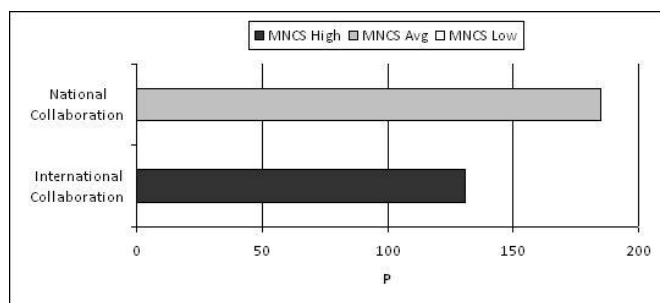


THCP10



MNJS

Collaboration



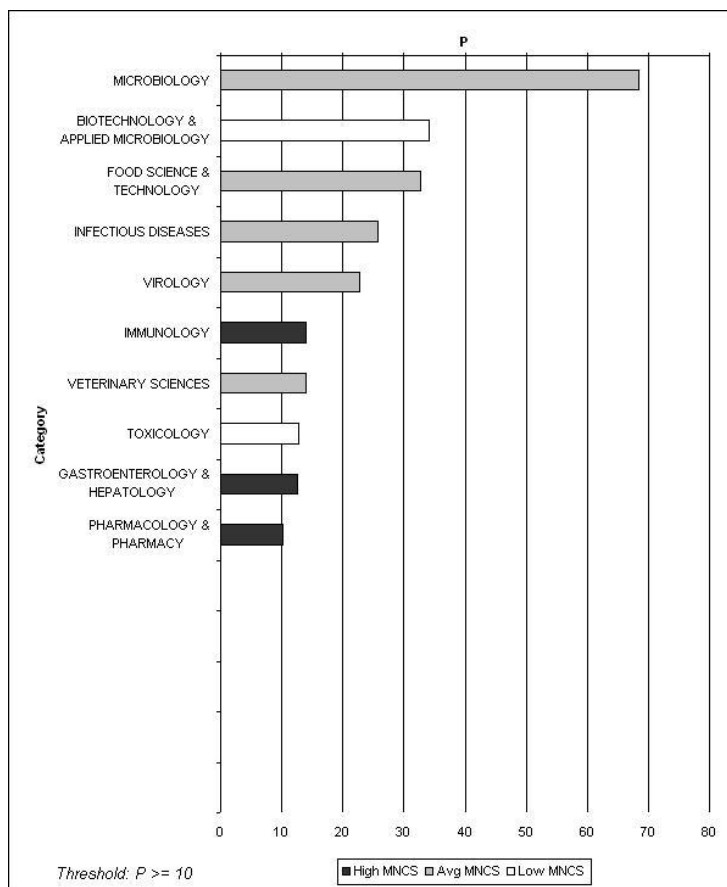
Performance (MNCS) by collaboration type



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